A COMPARISON OF ACADEMIC ACHIEVEMENT OF ELEMENTARY STUDENTS IN MULTI-GRADE AND SINGLE-GRADE RURAL CLASSROOMS IN NEWFOUNDLAND AND LABRADOR

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by

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ABSTRACT

This study was conducted to investigate the effects of multi-grade classroom organization on students' academic achievement. Students' scores resulting from the 1988 Canadian Tests of Basic Skills (CTBS) obtained from the Department of Education were analyzed to examine the difference between the mean scores of rural grade 6 students enrolled in single-grade classrooms and rural grade 6 students enrolled in multi-grade classrooms.

The questionnaire designed for this study was distributed to 58 randomly selected school principals throughout the province soliciting information to determine randomly selected students' class type, teacher qualifications, gender and socioeconomic status. Only students who were enrolled in their specific class type for three or more consecutive years were involved in the study. The final sample included 174 single-grade and 137 multi-grade for a total of 311 students.

Data from the CTBS results and the questionnaire completed by principals were analyzed by computing correlation coefficients for the independent variables (Class Type, Teacher Qualifications, Gender and Socioeconomic Status) and the scores of the dependent variables (Vocabulary, Reading Comprehension, Language Arts, Work Study Skills, Mathematics and Composite). A

multiple regression was computed to examine the magnitude of the relationship between the independent and dependent variables.

The investigation concluded that there is no significant difference in academic achievement between students of rural multi-grade classrooms and students of rural single-grade classrooms.

The results of this study provide school administrators research supported information on which to base their decisions regarding grouping within their school. The mere fact that a school has multi-grade classroom organizations should not cause administrators to question the academic achievement of students.

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This study would not be possible without the information supplied by Dr. L. Perry-Fagan and her staff at the Department of Education, superintendents of the Province's school districts and the principals of the selected schools. Thanks are also extended to Michele Shapter for her invaluable advice and computations of the statistics.

Encouragement, advice, typing, proofreading and understanding were wholeheartedly given by my wife, Phyllis. Therefore, this thesis is hereby dedicated to her and my son, Brad, for my debt of unrelenting support that was received.

Finally, acknowledgments are also extended to my parents, Helen and Thomas, for their extremely high value on education, exemplified work habits, instilled aggressive achievement attitude and spiritual training. An example of

their upbringing is demonstrated by a card given to me during the writing of this thesis containing the following verse written by an unknown author:

A Winners Creed

If you think you are beaten,
you are;
If you think you dare not,
you don't;
If you'd like to win, but think
you can't,
It's almost a cinch you won't.

If you think you'll lose, you're lost;
For out in the world we find
Success begins with a person's will,
It's all in the state of mind.

Life's battles don't always go
To the stronger or faster hand;
But sooner or later
The person who wins
Is the one who thinks "I can".

It is their spiritual training that instigated a dependence on the following scripture throughout this entire process: "If any of you lack wisdom, he should ask God, who gives generously to all without finding fault, and it will be given to him." (James 1:5)

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CHAPTER 1

Introduction

Recently, with decreased student enrolment in the schools of Newfoundland and Labrador, administrators are faced with the educational dilemma of returning to multi-grade classroom organizations, especially at the elementary level. The single-grade classroom emerged as the most prevalent administrative arrangement during the period of the "baby boom" generation. Multi-grade classrooms were the norm during the initiation of formal education within the Province.

Historically, Newfoundlanders settled along the coastline. Since the population of Newfoundland grew slowly and few roads were available to transport students, a small school was built in each fishing village. Later, with the resettlement of Newfoundlanders, improvement in transportation infrastructure and the "baby boom", some schools became centralized and others were closed. Rural educators in Newfoundland experienced, for a short period of time, the luxury of having single-grade classrooms. Currently, the Province's small sparsely distributed population compounded by a denominational education system, a sharp decline in birthrate, and a population shift towards more urban centres, has resulted in small single-

grade and multi-grade schools.

The Province's denominational education system has contributed to the many small schools within the Province and thus, is a contributing factor in the evolution and retention of multi-grade classrooms. Such a system has caused many communities within the Province to have two or more small schools of different religious philosophies. The significance of this factor is eminent if multi-grade students do not achieve as high academically as single-grade students. Should this be so, the denominational education system may be detrimental to the academic achievement of our students.

Enrolment peaked in the Province in 1971-72 at 162,818 students (Press 1990). It has been declining steadily, resulting in an increase in the number of multi-grade classrooms. Adjusting for the introduction of grade 12 in 1983-84, the net enrolment loss has approached 44,000 students (27.8%) since 1971-72. "Currently, enrolments have been declining by approximately 3,000 students per year" (Press 1990: 24). The Department of Education projects that by the year 2000 total enrolment will drop to 100,000 students with primary and elementary enrolment dropping a further 22 per cent (Press 1990).

Births in the Province will decrease to fewer than 6,000 per year and Kindergarten enrolments will decrease from 8,959 in 1988-89 to fewer than 7000 per year by the

year 2000 (Press 1990). Evidently, the population trend will cause small schools to become smaller, resulting in more multi-grade classrooms within the Province's education system.

Disapproval of the multi-grade arrangement has been evident in the consistently negative perceptions and attitudes often displayed towards multi-grade classrooms by both parents and educators. Parents often feel that the progress of their children in combined grade settings will be stifled and thus, have a detrimental effect on their academic achievement.

Purpose of the Study

The major purpose of this study was to examine and determine the effects of multi-grade classrooms on student achievement in Newfoundland and Labrador. More specifically, this study addressed the following questions:

1. Is there a significant difference in academic achievement between students of rural multi-grade classrooms and students of rural single-grade classrooms?
2. What factors -- other than the single-grade or multi-grade factor -- affect the standard of education and make schools effective?

To examine these research questions, the major hypothesis was that there is no significant difference in academic achievement between students of rural multi-grade classrooms and students of rural single-grade classrooms. This hypothesis was examined by testing the following:

H# 1. There is no significant relationship between the mean profiles of achievement in Vocabulary Canadian Test of Basic Skills (CTBS) scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 2. There is no significant relationship between the mean profiles of achievement in Reading Comprehension CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 3. There is no significant relationship between the mean profiles of achievement in Language Arts CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 4. There is no significant relationship between the mean profiles of achievement in Work Study Skills CTBS scores of rural grade six students and the class type in which they are enrolled,

multi-grade or single-grade classrooms.

H# 5. There is no significant relationship between the mean profiles of achievement in Mathematics CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 6. There is no significant relationship between the mean profiles of achievement in Composite CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

Conceptual Framework

The fact that classroom organizations are multi-grade or single-grade could be a key aspect in the functioning process of a school system. If the educational process in multi-grade classrooms is different from that of single-grade classrooms, then academic achievement may differ between the two classroom organizations. "Educational indicators are statistics that allow for value judgements to be made about key aspects of the functioning of educational systems" (Scheerens 1989: 2). Academic achievement is an educational indicator or, as sometimes termed, a performance indicator which describes the

performance of the educational system. Conceptualizing the educational system as a system of educational indicators is best attained through the context-input-process-output-outcome model of schooling, as depicted in Figure 1.

For the purposes of this study, the context and input of the multi-grade and single-grade classrooms remain constant. The process and output stages of the model were analyzed. The major focus herein was school organization from the process cell of the diagram and achievement from the output cell. Process indicators are linked to output indicators and thus, have the function of offering hypothetical explanations on why certain schools are more effective than others (Scheerens 1989).

"Process indicators generally refer to characteristics of educational systems that can be manipulated" (Scheerens 1989: 4). Since a teacher's time and effort must be divided between two grade levels in a multi-grade classroom as compared to only one grade level in a single-grade classroom, the multi-grade or single-grade school organization is considered a manipulating factor in academic achievement. Therefore, it is a key aspect in the process of schooling.

Combining two or more grades into a single classroom is manipulating the school organization. The process can be somewhat different in a multi-grade classroom than in a single-grade classroom. There is much

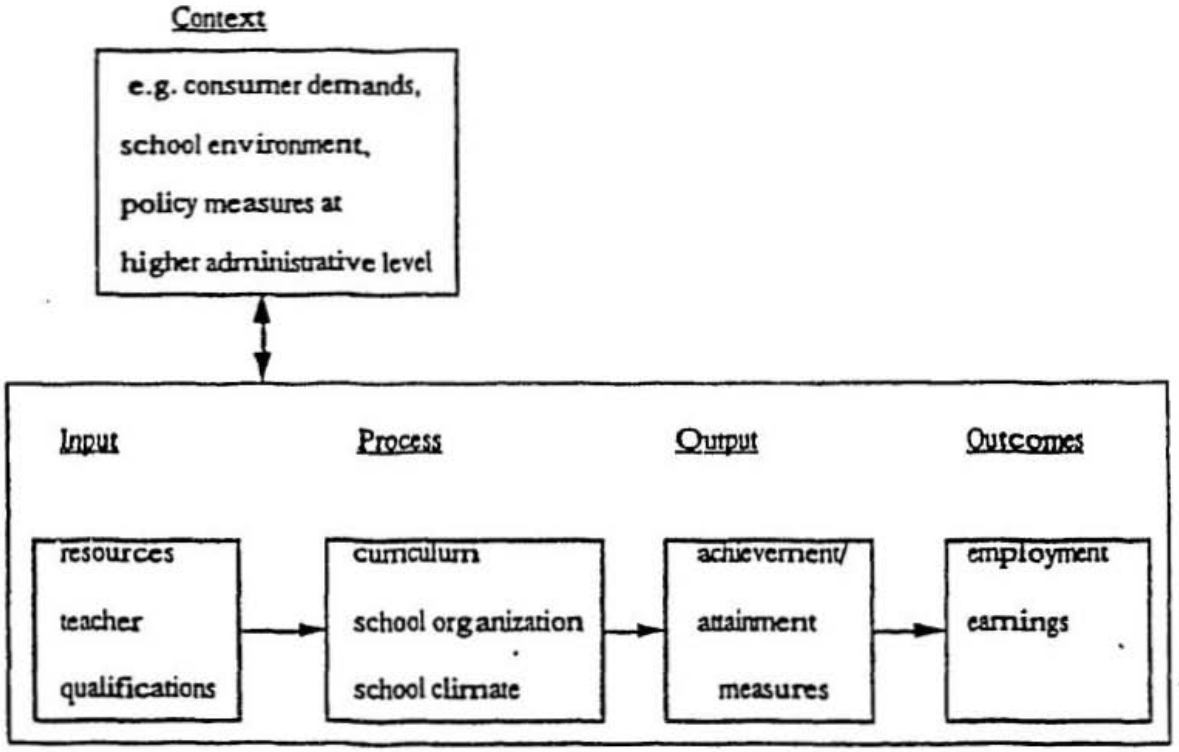

Figure 1: Context-Input-Process-Output-Outcome Model of Schooling (Scheerens 1989: 3)

research supporting the fact that there are significant differences in school climate of multi-grade schools and single-grade schools. The atmosphere of multi-grade schools is much more positive (Ford 1977; Way 1980; Milburn 1981). On the other hand, in a single-grade classroom the teacher only has to contend with one grade of students.

If, in fact, the process varies in multi-grade classrooms as compared to single-grade classrooms, there is

a real possibility that the output of the two systems would be somewhat different. The academic achievement, as measured by the common CTBS or the educational indicators, must be analysed in order to make a value judgement about this key aspect of the functioning of the education system.

Since the Province's education system is experiencing budgetary constraints and decreasing enrolments, it seems that multi-grade classrooms may be here to stay. As the enrolment of students registered in schools within the province of Newfoundland and Labrador decreases, the number of multi-grade classroom situations will probably increase (Press 1990). The school organization will likely, of necessity, change from single-grade to multi-grade. Students from more than one grade level will then have to be taught in the same classroom by one teacher. Many small schools in sparsely populated areas had multi-grade classrooms in the past. Now, and more especially in the future, even formerly large schools in densely populated areas have insufficient numbers of teachers to arrange classes into single-grades, so they too are forced to combine children from two or more grades into a single classroom.

Teachers, parents, boards and the Department of Education may have to accept the added challenge of the process and learn to cope with the educational organization. Educators involved in the process must meet the needs of all students

-- accelerated, average or remedial -- and in doing so, approach each child as an individual with strengths and weaknesses, regardless of the grade-level label of the class unit.

Significance of the Study

Recent publicly stated concerns to the media and to the Royal Commission of Inquiry into the Delivery of Programs and Services in Primary, Elementary and Secondary Education have signified that many educators and parents feel students in multi-grade classrooms are deprived of a decent standard of education. This study has been designed to determine if there are significant differences in academic achievement in multi-grade classrooms and single-grade classrooms. The results should be of interest to educators as a basis to lobby school boards and the Department of Education to address the problem, should one exist.

If the results conclude that there is no significant difference between the academic achievement of students who attend multi-grade classrooms and students who attend single-grade classrooms, then administrators may be equipped with research based information to educate parents and teachers who feel that multi-grade classrooms are a

backward step. If the results conclude that there is a significant difference between the academic achievement of students who attend multi-grade and students who attend single-grade classrooms, then this study should form a basis for the advancement of joint school services and even greater questioning of the denominational education system which contributes to an increase in the number of multi-grade classrooms within the Province.

In the practical world of the elementary principal, judgements regarding grouping are sometimes based upon individual biases rather than upon research supported results. This study provides some of the necessary information to make such a decision.

More importantly, in this age of educational inquiry within the Province where many existing small schools are coming under scrutiny and criticism, the results of this study refutes these criticisms waged at so-called small, ineffective schools. Given provincial economic conditions, declining enrolments within some geographical areas, and efforts of parents to combat the closing of their local school, combining grades may be an appropriate solution. Therefore, this study should aid Provincial educational policy makers in deciding the future of multi-grade classrooms.

Delimitations of the Study

The following factors are acknowledged as delimitations of the study:

1. The study is delimited to students enrolled in randomly sampled rural schools throughout the Province of Newfoundland and Labrador.
2. The study is further delimited to an investigation of grade 6 elementary school students who have taken the common CTBS exam during the 1988 school year.

Limitations of the Study

The following limitations are inherent within the study:

1. An attempt has been made to analyze grade, gender, socioeconomic status, cultural ethos, and teacher qualifications in studying the effect of multi-grade and single-grade class type on academic achievement, However, student-teacher ratio, intelligence quotient, staff turnover, parental involvement, order

and discipline, expectations, teaching strategies, curricular approaches and the availability of learning resources in the two groups compared in the study have not been controlled.

2. A basic problem in a study such as this lies in the definition of level of achievement. It is obvious that any achievement test can only measure a part of a student's educational achievements. Thus, any generalizations made on the data have to be in terms of the limitations of the test instruments used as a measure of achievement.
3. The limitation of academic achievement is also recognized as being neither the only major variable in determining effectiveness of a school nor the only standard by which educational attainment should be measured.
4. The statement of factors affecting the standard of education and making schools more effective other than whether or not students attend single-grade or multi-grade classrooms is limited to those gleaned from the existing literature and research available on the topic.

Definition of Terms

Academic Achievement: The attainment of the normed grade equivalents scores on the Canadian Tests of Basic Skills (CTBS) which correspond to the number of months the student has been in school.

Class Type: The type of classroom organization in which students were enrolled, multi-grade or single-grade.

Effective School: A school that has consistently high levels of academic achievement.

Multi-grade Classroom: A classroom in which students from two or more grade levels are combined for instructional purposes.

Rural School: A school located in a community that has a population of 5000 or less (Educational Statistics 1990: 115)

Single-grade Classroom: A classroom in which students from only one grade level are taught.

CHAPTER 2

REVIEW OF RELATED LITERATURE AND RESEARCH

Introduction

The multi-grade classroom, a classroom in which students from two or more grade levels are combined for instructional purposes, has received very little attention in comparison to the single-grade classroom. Most of the research conducted centers on the psychosocial development of students educated in that setting. Relatively few Canadian studies have been conducted on the cognitive development of students in multi-grade classrooms. It is necessary, then, to review related literature and research associated with academic achievement in multi-grade classrooms. This review is intended to lend support to the theoretical basis of this study and is organized under the following headings: 1) academic achievement studies, 2) time on task, 3) effective schools, and 4) other factors that affect achievement.

Academic Achievement Studies

Some studies have been carried out to determine the effects of multi-grade classrooms on students' achievement.

Still, there is considerable controversy about the effects of multi-grade classes on the achievement of children in the elementary school. A review of the research in this area shows conflicting results. Some authors writing about the topic are enthusiastic about the multi-grade classrooms. "Such claims as superior academic achievement, enabling students to work at their own level in subjects, and dissolving of barriers of age and grade attitudes occur often" (Brown 1989: 11). However, a number of studies have concluded that there is no significant difference between the achievement of students of multi and single-grade classes. Still others, a small number of studies, conclude that students of single-grade classes acquire higher academic achievement than students of multi-grade classes.

Rule (1983) located fourteen studies in the United States which investigated achievement effects of elementary multi-grade classes. Data for all of the studies were collected using standardized tests as the achievement measure. "Nine studies (Knight, 1938; Drier, 1949; Adams, 1953; Chace, 1961; Way, 1969; Harvey, 1974; McDonald and Wurster, 1974; Adair, 1978; Lincoln, 1981) showed no significant difference in the achievement of multi-grade and single-grade students" (Rule 1983: 30). Mixed results were reported by four other multi-grade studies (Rehwoldt and Hamilton, 1957; Finley and Thompson, 1963; Yerry, 1964;

Milburn, 1981). The results of the studies show no significant difference for some grades and tests, and favoured multi-grade for others.

Finley and Thompson (1963) reported results that favoured single-grade classes and others that favoured multi-grade classes, but concluded that there were no significant differences. Rule (1983) found only one study (Fosbay, 1948) that reported significantly different results in favour of single-grade classes. A more in-depth investigation of Rule's research and other studies, including two recent Canadian studies, will provide a focus for this research.

Hull (1958) concluded after a three year study that under the multi-grade classroom organization more learning takes place than under the traditional system of single grades. In the three skill subjects, Reading, Language and Mathematics, 61.6 percent of the 18 tests in each subject area favoured multi-grade and only 38.8 percent favoured single-grade learning experiences.

Rehwoldt and Hamilton (1959) conducted a comparison of gains in achievement between multi-grade classes and single-grade classes. Their experiment showed a consistent pattern of greater gains on the part of pupils who were in multi-grade classes. The study consisted of forming seven experimental classes of pupils from three or four elementary grade levels and conducting a comparison between

the multi-grade classes and single-grade classes. They concluded that the factors which contribute to the enhanced learning environment are:

1. Younger children are stimulated by working with older children.
2. Older children increase and strengthen their academic and social learning by working with younger children.
3. Grade standards are minimized which results in a greater and beneficial individualization of instruction.
4. The wide range of experiences, capacity and interest brings greater enrichment to the classroom program.
5. Less peer rivalry contributes to better social and personal adjustment. (p. 18)

Finley and Thompson (1963) compared the achievement of multi-grade and single-grade rural school children. The hypothesis in their study was that "there is no difference in the achievement in basic subjects of rural children in multi-graded classrooms" (p. 471). The samples for the study were comprised of matched pairs of 53 boys and 51 girls at the third-grade level and 62 boys and 46 girls at the fifth-grade level. The two groups were matched on the following basis:

1. Sex;
2. IQ within five points;
3. Chronological age within

three months; and

4. Participation in the yearly county-wide group testing program (pp. 1963: 471).

The investigators used the California Short Form Test of Mental Maturity to test mental ability and the California Achievement Battery Form W to test achievement (p. 472). The test areas investigated to acquire the subject achievement records were:

1. Reading vocabulary;
2. Reading comprehension;
3. Arithmetic fundamentals;
4. Arithmetic reasoning;
5. Mechani ; of English;
6. Spelling; and
7. Battery (p. 472).

T-values and mean differences were computed for boys, girls and the total group. The level of statistical significance used was .05.

Findings of the study supported the stated hypothesis that there are no significant differences in the achievement of rural school children, whether they are educated in a single-grade or multi-grade school environment (Finley & Thompson 1963).

Way (1980) studied suburban children ranging in age from six to ten years to explore the effects of multi-grade

classrooms on achievement. The study included three schools with multi-grade classrooms totaling 131 students and two single-grade schools totaling 231 children. Data for the study were collected by administering Comprehensive Tests of Basic Skills. After an analysis of variance of the means, the author concluded that there were no significant differences between children in multi-grade and single-grade classrooms on any of the achievement measures examined.

Rule (1983) conducted a comprehensive study to determine the effects of multi-grade classes on student achievement in Reading and Mathematics. The investigation of the impact of multi-grade classrooms on student achievement was conducted to answer questions raised concerning the use of multi-grade classes.

The sample of the study included 3,360 multi-grade and single-grade students from grades three through six. Data were collected from the available 1982 California Achievement Tests (CAT) scores. One-way analysis of variance using a post-test only design was used to analyze the data.

Only one of the twelve one-way analysis of variance tests on reading achievement revealed a significant difference: "high achieving students in grade four in multi-grade classes scored significantly higher than high achieving fourth-grade students in single-grade classes"

(Rule 1983: viii). However, "ignoring statistical significance, the mean scores in reading for students in multi-grade classes were higher than those for eight of the twelve comparisons" (Rule 1983: viii).

Mathematics results were slightly different with five out of twelve analyses comparing groups on Mathematics showing significant differences:

> Higher achieving third-graders in single-grade classes scored significantly higher than high-achieving third-graders in multi-grade classes; average-achieving third, fifth, and sixth graders in single-grade classes not in multi-grade schools outscored average third, fifth,and sixth graders in multi-grade classes; average/high achieving sixth-graders in multi-grade classes scored higher than average/high achieving sixth-graders in single-grade classes (p. vii).

Conclusions drawn from the results of the study indicate that no detrimental effects in Reading or Mathematics achievement occur with the use of multi-grade classes. However there was one exception; Mathematics achievement of average students in multi-grade classes was slightly lower than the single grade students (Rule 1983).

Brown and Martin (1986) conducted a study of eight elementary schools in New Brunswick having single and multi-grade classes at the same grade levels. Each student in the multi-grade classes was matched to a single-grade peer in the same school on the basis of sex, age and grade

level. The June final report card of academic achievements of students in the sample were analysed as well as CTBS scores. Conclusions drawn from the study revealed that there are differences in achievement between students in multi-grades and their matched counterparts in single-grades. Using the final report card, 80 percent of the comparisons were equivalent to or favoured the multi-grade classes and only 20 percent favoured the single-grade. The CTBS scores revealed even greater findings favouring multi-grades, 87 percent and 13 percent respectively. However, they found that the achievements in either class setting were not significantly different and thus, concluded that there are no significant differences in achievement between single and multi-grade classes.

Gajadharsingh and Melvin (1987) conducted a study specifically designed to learn about the effects of class type, multi-grade and single-grade, on the achievement of students in grades three through six. The sample used in the study consisted of 4,407 subjects from city, town, village and hamlet schools in Saskatchewan who had written the Canadian Tests of Basic Skills. The CTBS test scores in English and Mathematics were taken from students' records supplied by Saskatchewan School and Division administrators. The six variables tested were Vocabulary, Reading Comprehension, Total Language, Problem Solving, Concepts and Total Mathematics.

> The results of the study clearly indicate that the achievement of students in multi-grade classrooms was significantly higher than that of students in single-grade classrooms in the Vocabulary, Reading, Mathematics Concepts, Mathematics, Problem Solving and Mathematics Total tests (p. 23).

These results confirmed Rehwoldt's (1957) findings which suggested "that the academic achievement of students in multi-grade classrooms in Reading, Arithmetic and Language exceeded those of students enrolled in single-grade classrooms" (Gajadharsingh & Melvin 1987: 23).

In light of the studies conducted in achievement, the majority of recent researchers conclude that there is no significant difference in achievement between students of multi-grade and single-grade classrooms. However, within studies, some variation has been found in certain subject areas and/or grade levels, sometimes favouring multi-grade and sometimes favouring single-grade classrooms. In earlier research studies, Hull (1958) and Rehwoldt and Hamilton (1959), reported results in favour of the multi-grade classroom, and one study, Fosbay (1948), reported significantly different results in favour of the single-grade classroom.

Time-on-Task

Time-on-task has been documented as a definite factor contributing to student achievement. The effective use of learning time is considered an important factor for achievement and thus, is an essential element in learning and a potentially useful instructional variable. In the Netherlands in the early 1980's, Veenman, Lem and Winkelmolen researched time-on-task and achievement in mixed age classes. They defined learning time "as the amount of time a pupil is definitely 'on task'" (Veenman et al. 1987: 77). The literature defines time-on-task as engaged time or active learning time. Veenman et al. (1987) defines teacher instructional time "as the amount of time the teacher spends on instructional activities such as supervision, management and giving information" (p. 77).

In their research, Veenman et al. (1987) studied the use of learning and instructional time during Mathematics and Language instruction in multi-grade and single-grade classrooms to pursue answers to the following four questions:

1. How do pupils and teachers in mixed age classes spend their learning and instructional time during reading/language and mathematics instruction?

2. In what way do students with different ability levels use their learning time?

3. What is the relationship between grouping arrangements of pupils and their learning time?

4. What is the relationship between active learning time and academic achievement in mixed age and single age classes? (pp. 77-78)

Trained observers collected data from 12 mixed age classes and 12 single age classes in primary schools. Four achievement tests were also administered at different intervals throughout the year.

The results of the research concluded that "no significant differences were found between observed time spent in content areas between mixed age and single age classes" (Veenman et al. 1987: 80). In mixed age classes, students spent more time working independently, while in single-grade classes instruction was more lecture oriented, directed at the whole class (Veenman et al.). In academic achievement, the researchers conclude that the type of class organization, multi-grade or single-grade, is not associated with pupil achievement. Their data did not support the commonly held view that pupils in mixed age classes have lower levels of on-task behaviour and achieve less than pupils in single age classes. Since students in multi-grade classrooms spend as much time-on-task as students in single-grade classrooms, this variable should not cause variation in academic achievement in multi-grade

versus single-grade classrooms.

Effective Schools

Analysis of the effective schools literature presents very little evidence that multi-grade classrooms are less effective than single-grade classrooms. While the studies conducted do not deal directly with multi-grade classroom organizations, the fact that none of the factors presented as contributing to school effectiveness have to be excluded from a multi-grade situation, speaks volumes.

This study is mainly concerned with the academic achievement of students. The majority of the effective schools research has defined an effective school exclusively in terms of student academic achievement as measured on standardized achievement tests. Therefore, an analysis of the effective schools' literature is pertinent, since its major concern of academic achievement is relevant to this study.

Effective schools' research began with the growing concern for accountability which resulted in studies by Coleman et al. (1966) and Jencks et al. (1972) concluding that schools had little effect on student achievement and that variations in achievement are more likely to be the result of background factors rather than schooling (Downer

1988). In reaction to Coleman and Jencks' studies, many researchers have challenged the conclusions and have presented evidence suggesting that some schools have powerful effects upon their students.

Rutter (1979) and his associates researched outcomes of 12 inner-city schools in London for five years and identified seven characteristics under the control of teachers and administrators that accounted for observed differences (Steller 1988). These were: 1) academic emphasis, 2) skills of teachers, 3) teachers' instructional behaviour, 4) rewards and punishment, 5) student climate, 6) student responsibility and participation, and 7) staff responsibility and participation.

Edmonds (1979; 1981) identified a list of five characteristics of an effective school: strong administrative leadership, high expectation for student achievement, an orderly atmosphere conducive to learning, an emphasis on basic-skill acquisition and frequent monitoring of pupil progress (Oakley 1988).

In a comprehensive review of the effective schools' research, Perkey and Smith (1983) presented a "portrait" of an effective school which includes content variables and process variables. In their study, "content refers to such things as the organizational structure, roles, norms, values, and instructional techniques of a school and the information taught in the curriculum" (p. 440). The

content or organizational structure variables were:

1. School-site management;
2. Instructional leadership;
3. Staff stability;
4. Curriculum articulation and organization;
5. Schoolwide staff development;
6. Parental involvement and support;
7. Schoolwide recognition of academic success;
8. Maximized learning time; and
9. District support. (pp. 442-445)

The process variables were:

1. Collaborative planning and collegial relationships;
2. Sense of community;
3. Clear goals and high expectations commonly shared; and
4. Order and discipline. (pp. 445-446)

With reference to the process variables, Purkey and Smith (1983) note: "These variables are the dynamics of the school: that is, they seem responsible for an atmosphere that leads to increased student achievement" (p. 245).

Sammons and Mortimore (1980) conducted a four-year study in London that resulted in the compilation of twelve factors that distinguish effective elementary schools from less effective ones. They "found that although some

schools are more advantaged in terms of their size, status, environment, and stability of teaching staff, these favorable characteristics do not, by themselves, ensure effectiveness" (p. 6). These factors only provide the supporting framework within which the staff can promote academic achievement. The crucial factors are the policies and process within the control of the principal and teachers, which can be changed and improved. The twelve key factors of effectiveness, most of which are under the control of the principal and teachers, are:

1. Purposeful leadership of the staff by the principal;
2. Involvement of the assistant principal;
3. Involvement of teachers;
4. Consistency among teachers;
5. Structured sessions;
6. Intellectually challenging teaching;
7. Work-centered environment;
8. Limited focus within sessions;
9. Maximum communication between teachers and students;
10. Record keeping;
11. Parental involvement; and
12. Positive climate.

(pp. 7-8)

These twelve key factors that paint a picture of what

constitutes an effective elementary school are more process oriented than classroom organization oriented.

The most persuasive effective schools research suggests that students' academic performance is strongly affected by school culture (Sackney 1986). Culture is "an informal understanding of the 'way we do things around here'" (Sackney 1986: 16).

Sackney identified three major dimensions of a school culture that enhance student learning: "a common mission, an emphasis on learning, and a climate conducive to learning" (1986: 16). In his schematic presentation, the three dimensions are composed of eleven attributes or variables that differentiate more effective from less effective schools (Figure 2).

In the model,"a common mission" consists of three attributes:

> Purpose-clearly enunciated goals and objectives that are subscribed to by staff and community.
>
> School "ethos"-an agreement on the norms and values that are important in creating a culture conducive to learning.
>
> Instructional leadership-the principal emphasizes instructional leadership as opposed to management. (p. 17)

The "emphasis on learning dimension" consists of the four attributes:

> Practical monitoring-student work is regularly monitored and results are reported promptly.
>
> High expectations-teachers hold high expectations for al students; they believe that all students can learn.
>
> Effective teaching skills-classroom teachers exhibit effective teaching skills and constantly strive to improve.
>
> Instructional focus-the classroom focus is effective use of instruction-in terms of appropriate curriculum, high academic learning time, and emphasis on mastery learning. (pp. 16-17)

The four attributes of the dimension "a climate conducive to learning" are:

> Consistency-emphasis is on consistency in dealing with problems and issues.
>
> Rewards and praise-effective use of rewards and praise; there is a clear reward system.
>
> Appearance and comfort of the school environment-the school is clean and tidy with much student work displayed on classroom walls.
>
> Student participation-students are allowed a high degree of responsibility for their learning. Students actively participate in a variety of school activities. (p. 18)

A Model of School Effectiveness Variables

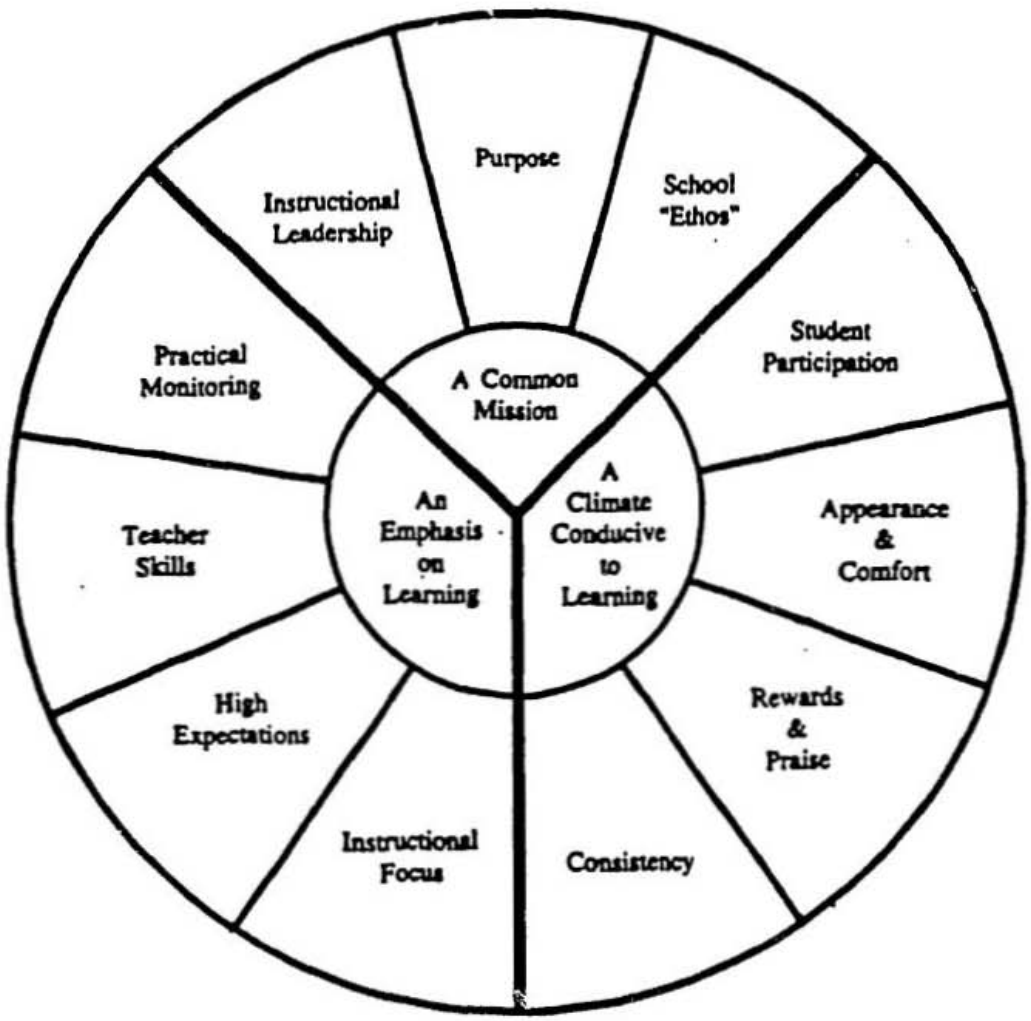

Figure 2: A Model of School Effectiveness Variables (Sackney 1986: 17)

Sackney's model of school effectiveness variables presents the attributes of an effective school. The culture of a multi-grade classroom organization can encompass all of these effectiveness variables. Therefore, a multi-grade classroom organization can be as effective as a single-grade.

The following summary list of characteristics of effective schools extrapolated from the literature are the central features in an effective school as supported by numerous research investigations:

1. High expectations for student achievement on the part of staff members;
2. Strong instructional leadership on the part of the principal or another staff member;
3. Clearly articulated school goals and objectives;
4. Frequent monitoring of student achievement;
5. Constant academic emphasis particularly of basic skills;
6. Positive motivational strategies in the form of suitable rewards and praise for students and staff;
7. A safe and orderly school climate;
8. A vigorous staff development program;
9. A high level of parental and community contact;
10. Quality instructional strategies;

11. Low staff turnover; and
12. Clear school mission that brings a co-operative atmosphere among the teaching staff.

These characteristics of an effective school are variables that would increase the academic achievement of the students within the school system whether it is a multi-grade or a single-grade. None of the characteristics should be unattainable by any school system and therefore, should be the focus of the vision of any school administration and staff.

Other Factors that Affect Achievement

The literature reveals many factors that affect the academic achievement of students in multi-grade classrooms. A brief review of some of these factors is relevant to this study.

Many schools have gone through the pattern of multi-grade to single-grade within the Province. It is assumed that such a pattern represents progress. The tendency to label all things of the past as "backward" has caused multi-grade classrooms to be perceived as backward (Bishop 1982). If educators, parents and students perceive multi-grade classrooms as being backward, that attitude may

detrimentally affect academic achievement.

It has been assumed by educators and parents that a single grade being taught by a teacher is an ideal situation since the teacher had to address only one group of students. Evidence from personal observations of classroom practice and from informal interviews with teachers indicate that in such a situation, teacher directed instruction is the predominant means of assisting students to acquire the desired objectives of a specific course. This style of teaching and learning can deprive elementary students of the opportunity to think for themselves and develop work habits that will enable them to work independently (Gajadharsingh and Melvin 1987).

The style of teaching in a multi-grade classroom is characterized by direct teaching of concepts to one grade in the classroom followed by immediate reinforcement through an individual or group activity because the teacher must move on to teach the next grade. Students are therefore encouraged to work independently and take responsibility for the time that the teacher is unavailable to them. Students know that the teacher will be teaching the other grade and that they will have to work independently. Thus, they will develop crisper listening skills. The procedure of direct teacher instruction followed by immediate practice may account for student gains in developing greater independence and more effective

study habits (Gajadharsingh and Melvin 1987).

Multi-grade teaching, by nature, lends itself to small group teaching. In teaching a single-grade within a multi-grade classroom, the teacher is teaching a small number of students. The eye contact and the individual attention given to students to keep them cued into what is being taught is greatly enhanced in small group teaching.

Children in multi-grade classrooms have an advantage over students in single-grade classrooms in that they can listen to the teaching taking place in the other grade and reap the benefits (Roe 1981). If they are listening to instruction being given to a higher grade level, they are being stimulated; if they are listening to a lower grade level, they are receiving review.

On many occasions, in a single-grade or multi-grade situation, students have to wait for their peers. In a single-grade situation, elementary students may use the time to read, while primary students may just explore pictures or games while they are waiting. In the multi-grade situation, the waiting time can be spent listening to instruction being given to another grade level.

Multi-grade classrooms allow for better placement of students according to their ability. In Newfoundland and Labrador, automatic promotion in the primary and elementary grades is the norm. Therefore, students may be placed in single-grade classrooms where they may experience

difficulty. In the multi-grade classroom, there is an advantage in assignment of students to a grade but not necessarily having them work on that grade level in all subjects (Bishop 1982).

> In the single-grade classroom, there is a much greater possibility of a student being placed according to convenience rather than according to real competence and ability. A multi-grade situation is much more flexible and allows for grouping according to actual achievement rather than on the basis of age and grade alone (Bishop 1982: 35).

In a multi-grade situation, students need not work at levels which do not correspond to ages or to the "grade" to which they may be assigned.

Maslow's theory of hierarchical needs implies that students who feel socially, emotionally and psychologically secure will indeed perform academically. According to Mycock (1972), there are a variety of affective gains for children in multi-grade classrooms. The literature suggests that students in multi-grade classrooms have a greater sense of belonging, support, security and confidence than pupils in single-grade classrooms. Since the children can stay with the same teacher for at least two years, teachers seem to be able to develop a greater sense of rapport with their pupils. The resulting sense of

security and stability promotes and enhances a relaxed sense of confidence in the students. One major confidence builder is the use of student helpers to assist peers of lower grades. Older children become more receptive to the needs of younger children and are eager to help. Children develop a co-operative spirit with the older children developing self-esteem as they realize they can help and have a chance to be a hero to a younger child. Multi-grade classrooms "offer a slight but consistently positive advantage in personality and social development" (Ford 1977: 152).

Way (1980) explored the effects of multi-grade classrooms on self-concept as well as achievement. She measured self-concept using the Piers-Harris Children's Self-Concept Scale. The self-concept measure produced a significant difference between children in multi-grade and single-grade classrooms on the factors labeled happiness and satisfaction, with the multi-grade classrooms having a higher mean score on this factor. However, she did conclude that while children in multi-grade classrooms had consistently higher mean scores than single-grade classroom children on each of the other factors and on the total self-concept score, the difference was not significant.

Way's findings of higher scores for children in multi-grade classrooms on the happiness and satisfaction factor appear to indicate that multi-grade classrooms

provide an atmosphere of contentment. She says that the multi-grade classroom provides large benefits in the affective domain; "children do not learn more but learning is occurring in a happier environment. Joy in the process of learning is certainly a worthy goal for education" (1980: 16).

Milburn (1981) suggests that children of multi-grade classrooms have a more positive attitude toward school than their counterparts in traditional single-grade classrooms. It is obvious that students who exhibit a positive attitude toward school will develop enhanced work habits and, thus, perform better academically.

Summary

The literature presents a number of studies on the effects of multi-grade classrooms on student academic achievement. Recent studies have found no significant difference between the academic achievement of students in multi-grade and single-grade classrooms. One major variable that has sparked interest, time-on-task, should not negatively affect academic achievement in the multi-grade classroom, since there is no significant difference between time-on-task in multi-grade and single-grade classrooms. The effective schools literature has not

revealed any characteristics of an effective school that cannot be present in a multi-graded classroom. Other factors gleaned from the literature that have potential to affect academic achievement, such as greater self-concept, more independence and an increased sense of security, portray many positive attributes of the multi-grade classroom.

CHAPTER 3

METHODOLOGY

Design of the Study

The purpose of this study was to determine the effects of multi-grade classes on students' academic achievement in rural schools of Newfoundland and Labrador. The research questions addressed were:

1. Is there a significant difference in academic achievement between students of rural multi-grade classrooms and students of rural single-grade classrooms?
2. What factors -- other than the single-grade or multi-grade factor -- affect the standard of education and make schools effective?

The design of this study is descriptive research. The purpose of descriptive research is "to collect detailed factual information that describes existing phenomena" and "to make comparisons and evaluations" (Isaac 1971: 18). The study reports CTBS results in randomly selected schools throughout the province of Newfoundland and Labrador. The analysis of these results is of benefit to educators in making future plans and decisions.

Sample

The population of this study consisted of grade 6 elementary students enrolled in rural schools dispersed throughout the province. Criteria used for selecting the sample were as follows:

1. All students involved in the study were enrolled in single-grade classrooms or multi-grade classrooms at the grade 6 level in their respective schools.
2. All students involved in the study have been enrolled in the specific type of classroom (single-grade or multi-grade only) for at least three consecutive years including the year of the data collection.
3. All students involved in the study wrote the CTBS achievement test in 1988.
4. All students were enrolled in rural elementary or all-grade schools.

The superintendents of all the Province's 29 school districts, which covered the 32 school districts in 1988, were contacted requesting permission to conduct the study within their districts. Along with permission, each board was requested to send a list of the multi-grade and a list of the single-grade classroom schools in its district.

Twenty-four of the 32 districts replied to the

request. All district superintendents who replied granted permission or conditional permission except one who stated that they had no multi-grade classroom situations.

Even though all school districts did not reply, the thirty school boards that had schools located in rural communities within the Province were included in the study. Two rural schools were randomly selected from each school board, with the exception of selecting only one school from two boards which had only one school in a rural community. Therefore, 58 schools were selected to be involved in the study.

The 1988 grade 6 CTBS scores and students' names were obtained from the selected schools' summary sheet record supplied by the Department of Education. Randomly selected students' names from each school were listed on a form designed to solicit the information needed for the study (See Appendix A: Data Form). That form containing the list of randomly selected students' names was sent to each school principal for completion early in December, 1991. The form was designed to solicit information on the listed students' class type for three consecutive years, teacher qualifications, gender, and socioeconomic status.

A reminder was sent to each principal who had not returned the questionnaire within two weeks. Fifty three questionnaires were returned, with 23 multi-grade and 18 single-grade classroom organizations used in the study.

Five questionnaires were not returned and 13 of the returned questionnaires were excluded; one principal stated that the Board did not grant permission for the study; three questionnaires were completed incorrectly; four forms had the incorrect students listed; finally, four groups of students were in their class type for less than three consecutive years.

The eventual sample totaled 311 grade 6 students, which consisted of 137 students enrolled in multi-grade classrooms and 174 students enrolled in single-grade classrooms.

Data Collection

Data to answer research question one were collected from the CTBS summary records of results attained by students of the respective schools. The results of the subtests of the CTBS are recorded as grade equivalent scores. The grade equivalent subtest scores in Vocabulary, Reading Comprehension, Language Skills, Work Study Skills, Mathematics and Composite for each student were ascertained from the summary records obtained from the Department of Education.

The form designed to collect data for the study was sent to the selected schools. It solicited teacher

qualifications, students' gender, parents' occupation, and whether or not the student was enrolled in the specific classroom type for three or more consecutive years. The teachers' years of experience and years of post secondary education were combined, as in decision making for salary purposes, to determine teacher qualifications.

Research question two was addressed through information gleaned from the effective schools literature.

Instrument

The main instrument used to collect data for this study was designed by the researcher. It was designed to solicit the individual teacher qualifications, students' gender, parents' occupation, and whether or not the student was enrolled in the specific classroom type for three or more consecutive years.

Blishen's Occupational Class Scale was used to determine the socioeconomic status of each student as reflected by the parents' occupations.

The third instrument relied upon for data used in this study was the CTBS scores. Within this Province, these tests were administered to all grade 6 students in 1988. "The Canadian Tests of Basic Skills are norm-referenced tests which have been designed to spread

students out on measures of the objectives of Canadian curricula" (Blagdon 1988: 1). The test "tells where students stand with reference to a norm group" (Blagdon 1988: 1). Therefore, the test is especially fitting for this study since its "results can be used to identify groups and individuals whose performance is below an expected level" (Blagdon 1988: 1).

Investigations of the CTBS have revealed them to be both reliable and valid. "The amount of error in scores is referred to as the standard error of measurement (SEM)" (Blagdon 1988: 13). The SEM of each subtest in grade equivalents for grade 6 ranges from 1.5 to 6.4 months with the average being 4.4 months (Blagdon 1988). (See Appendix B: SEM and Reliability.) "The amount of unsystematic variation in scores examinees would get if they took a test over and over is referred to as reliability" (Blagdon 1988: 13).

> One way of assessing the reliability of a test is to divide it into two halves and correlate the score received by each student on one half of the test with the score received on the other half. Average correlations give a measure of the internal consistency of the test. Reliability of the Canadian Tests of Basic Skills is assessed through the calculation of an alpha-coefficient which gives the average correlation between all possible split-halves of the test. (Blagdon 1988: 13)

On a scale of 0 to 1, the CTBS yields coefficients

ranging from .75 to .98 on internal consistency (Blagdon 1988. Also see Appendix B: SEM and Reliability.) "It should be noted that the smaller the SEM statistic is, and the closer to 1.0 the reliability coefficient is, the better the test is" (Blagdon 1988: 13).

Analysis of the Data

Data used in the statistical analysis for this study came from the CTBS and the data forms sent to each randomly selected school. Data were analyzed using the Statistical Package for the Social Sciences (SPSS). A multiple regression analysis procedure was used to examine the effects of the independent variables (classroom type, teacher qualifications, gender and socioeconomic status) on the dependent variables (students' achievement on Vocabulary, Reading Comprehension, Language, Work Study Skills, Mathematics and Composite). Results of this test has enabled the researcher to determine that the academic mean profile of students in multi-grade classrooms and the academic mean profile of students in single-grade classrooms does not differ significantly. The major hypothesis is that there is no significant difference in academic achievement between students of rural multi-grade classrooms and students of rural single-grade classrooms.

This hypothesis was examined by using the multiple regression procedure to test the following:

H# 1. There is no significant relationship between the mean profiles of achievement in Vocabulary CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 2. There is no significant relationship between the mean profiles of achievement in Reading Comprehension CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 3. There is no significant relationship between the mean profiles of achievement in Language Arts CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 4. There is no significant relationship between the mean profiles of achievement in Work Study Skills CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 5. There is no significant relationship between the mean profiles of achievement in Mathematics CTBS scores of rural grade six students and the

class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 6. There is no significant relationship between the mean profiles of achievement in Composite CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

The level of significance used in the analysis was the .05 level.

CHAPTER 4

ANALYSIS OF DATA

The purpose of this chapter is to present and interpret the results of the statistical analysis of the data collected during the study in light of the questions posed in Chapter 1. First, descriptive statistics for the dependent variables of achievement in Vocabulary, Reading Comprehension, Language Arts, Work Study Skills, Mathematics, and Composite will be presented. Secondly, the results of a multiple regression that was computed for the dependent variables listed above and the independent variables Class Type, Teacher Qualifications, Gender and Socioeconomic Status will be analyzed.

Descriptive Statistics

The sample for the study consisted of 311 grade six elementary students from rural schools dispersed throughout the Province. One hundred seventy four students (55.9%) were enrolled in single grade classrooms and 137 students (44.1%) were enrolled in multi-grade classrooms. The sample included 166 female students (53.4%) and 145 male students (46.6%). The majority (51.1%) of the sample's social economic class was at the lowest ranking (Table

1). Of the teachers involved, 257 (82.6%) were rated as highly qualified, 45 (15.1%) had medium qualifications and only 7 (2.3%) were found to have minimal qualifications.

Table 1

Socioeconomic Status of Students

Socioeconomic Status		Frequency	Percent
Social class	2	15	4.8
Social class	3	15	4.8
Social class	4	37	11.9
Social class	5	28	9.0
Social class	6	57	18.4
Social class	7	159	51.1
Total		311	100

Means, standard deviations and variances were generated for the dependent variables for the total sample of 311 students (Table 2). Means and standard deviations were also generated for the dependent variables according to the two class types, multi-grade and single-grade (Table 3).

The purpose of this study was to compare students' academic achievement in multi-grade classrooms with

Table 2

Means, Standard Deviations (S.D.), and Variances for the Dependent Variables (N = 311)

Variables	Means	S.D.	Variance
Vocabulary	5.453	1.306	1.705
Reading	5.775	1.205	1.705
Language	5.602	1.087	1.181
Work Skills	5.629	0.996	0.991
Math	5.975	0.891	0.794
Composite	5.684	0.933	0.891

students' academic achievement in single-grade classrooms. An investigation of the means in Table 3 reveals that for three of the curriculum areas in which data was collected (Reading Comprehension, Work Study Skills, and Math), the mean CTBS scores of students in multi-grade classrooms were slightly higher than the mean CTBS scores of students in single-grade classrooms. In the other three curriculum areas (Vocabulary, Language Arts, and Composite), the mean CTBS scores of students in single-grade classrooms were slightly higher than the mean CTBS scores of students in multi-grade classrooms. The minimal differences in the means was consistent with the literature presented earlier

in this study, namely, that there is no significant difference between the mean scores of students enrolled in multi-grade classrooms and the mean scores of students enrolled in single-grade classrooms. However, since the differences between the means for multi-grade CTBS scores and single-grade CTBS scores were minimal, further detailed analysis of this difference is necessary.

Table 3

Means and Standard Deviations (S.D.) for the Dependent Variables Classified as Multi-Grade (M.G.) and Single-Grade (S.G.) (M.G. N = 137 / S.G. N = 174)

Variables	Class Type	Means	S.D.
Vocabulary	M.G.	5.441	1.306
	S.G.	5.463	1.289
Reading	M.G.	5.812	1.175
	S.G.	5.747	1.231
Language	M.G.	5.476	1.055
	S.G.	5.701	1.104
Work Skills	M.G.	5.641	1.022
	S.G.	5.620	0.977
Math	M.G.	5.991	0.868
	S.G.	5.963	0.911
Composite	M.G.	5.659	0.933
	S.G.	5.704	0.936

Correlation Coefficients

Correlation coefficients for the independent and dependant variables were computed. Since regression analysis is based on a correlation matrix, correlations for all the variables are presented in Table 4. The correlations between the independent variable, Class Type, and the dependent variables, Vocabulary, Reading Comprehension, Language Arts, Work Study Skills, Math and Composite, were .009, -.027, .103, -.011, -.015 and .024 respectively (Table 4). The only relationship that was statistically significant at the .05 level was Language Arts and Class Type which had a significance level of .035. Therefore, based upon the statistical analysis of the correlation coefficients, five of the six proposed hypotheses were not rejected:

H# 1. There is no significant relationship between the mean profiles of achievement in Vocabulary CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 2. There is no significant relationship between the mean profiles of achievement in Reading Comprehension CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade

Table 4

Correlation Matrix for Independent and Dependent Variables

Variables	Vocab.	Read	Lang.	WSkil	Math	Com.	CLTY	TeQu.	Gen.	SoEc.
Vocab.	1.000	.000	.000	.000	.000	.000	.441	.004	.027	.000
Read	.734	1.000	.000	.000	.000	.000	.318	.018	.016	.000
Lang.	.666	.655	1.000	.000	.000	.000	.035	.024	.000	.000
WSkil	.576	.582	.595	1.000	.000	.000	.426	.065	.455	.003
Math	.622	.632	.699	.639	1.000	.000	.395	.023	.041	.001
Com.	.870	.852	.857	.772	.829	1.000	.337	.011	.006	.000
ClTy	.009	-.027	.103*	-.011	-.015	.024	1.000	.000	-.080	-.111
TeQu	-.148*	-.119*	-.113*	-.086	-.113*	-.131*	-.203	1.000	.022	.065
Gen.	-.109*	-.122*	-.219*	-.006	-.099*	-.142*	.081	.347	1.000	.276
SoEc	-.196*	-.198*	-.253*	-.157*	-.177*	-.234*	.026	.127	.034	1.000

Note: Correlation coefficients below the diagonal; significance levels above the diagonal.

* P < .05

classrooms.

H# 4. There is no significant relationship between the mean profiles of achievement in Work Study Skills CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 5. There is no significant relationship between the mean profiles of achievement in Mathematics CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 6. There is no significant relationship between the mean profiles of achievement in Composite CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

Hypothesis # 3, "There is no significant relationship between the mean profiles of achievement in Language Arts CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms", was rejected since its correlation of .103 with a significance of .035 was statistically significant at the .05 level of significance (Table 4). The correlation would imply that there is a relationship between Language Arts CTBS scores and Class Type. However, since the correlation is only .103, it is

considered a low coefficient. Therefore, there is a very weak relationship between Language Arts CTBS scores and Class Type. Multi-grade class type was entered in the data as 1 and single-grade as 2. Thus, a positive correlation, would imply a positive relationship between a single-grade class type and a higher CTBS score and a negative correlation would imply a positive relationship between multi-grade and a higher CTBS score.

Further analysis of the correlation matrix for independent and dependent variables reveals that there were many statistically significant relationships between other independent variables and the dependent variables.

The correlation between the independent variable, Teacher Qualifications, and the dependent variables Vocabulary, Reading Comprehension, Language Arts, Work Study Skills, Math and Composite, were -.148, -.119, -.113, -.086, -.113 and -.131 respectively. These relationships were all statistically significant at the .05 level of significance except for the correlation of -.086, the correlation between Teacher Qualifications and Work Study Skills (Table 4). Since Teacher Qualifications were entered in the data as 1: high qualifications, 2: medium qualifications and 3: low qualifications, the negative correlation would imply a positive relationship between high qualifications and high scores.

The correlations between the independent variable,

Gender, and the dependent variables, Vocabulary, Reading Comprehension, Language Arts, Work Study Skills, Math and Composite, were -.109, -.122, -.219, -.006, -.099 and -.142 respectively. These relationships were all statistically significant at the .05 level except for the correlation of -.006, the correlation between Gender and Work Study Skills (Table 4). Since female was entered in the data as 1 and male as 2, the negative relationship would imply that female gender had a positive effect on scores.

The correlation between the independent variable, Socioeconomic Status, and the dependent variables, Vocabulary, Reading Comprehension, Language Arts, Work Study Skills, Math and Composite, were -.196, -.198, -.253, -.157, -.177 and -.234 respectively. These relationships were all statistically significant at the .05 level of significance (see Table 4). Since a high socioeconomic status score in the data signified a low socioeconomic class, the negative correlations imply that a high socioeconomic class student would score higher than a low socioeconomic class student.

Multiple Regression

A multiple regression was computed to examine the magnitude of the relationships between the independent and

dependent variables in the study. This procedure uses the principles of correlation and regression to explain the variance of a dependent variable by estimating the contribution of each independent variable to this variance. The regression was utilized to examine the effects of Class Type, Teacher Qualifications, Gender and Socioeconomic Status (independent variables) on the outcome scores of Vocabulary, Reading Comprehension, Language Arts, Work Study Skills, Mathematics and Composite (dependent variables). Six multiple regression equations were created using the four independent variables and one dependent variable in each:

1. Vocabulary = function of (Class Type, Teacher Qualifications, Gender and Socioeconomic Status)

2. Reading Comprehension = function of (Class Type, Teacher Qualifications, Gender and Socioeconomic Status)

3. Language Arts = (Class Type, Teacher Qualifications, Gender and Socioeconomic Status)

4. Work Study Skills = (Class Type, Teacher Qualifications, Gender and Socioeconomic Status)

5. Mathematics = (Class Type, Teacher Qualifications, Gender and Socioeconomic Status)

6. Composite = (Class Type, Teacher Qualifications, Gender and Socioeconomic Status)

Hypothesis Number one in Chapter 3 stated that,

Table 5

Regression Coefficient, Standardized Regression Coefficients, T-Values and Significance Levels for the Vocabulary Equation

	Dependent Variable Vocabulary				
Independent Variables	B	SE(B)	Beta	T	Sig T
Class Type	-.131	.149	-.050	-.877	.381
Teacher Qualifications	-.416	.163	-.144	-2.551	.011
Gender	-.270	.145	-.103	-1.867	.063
Socioeconomic Status	-.173	.051	-.189	-3.394	.001

Multiple R .26287

R-Square .06910

Note: B = regression coefficients; SE(B) = standardized partial regression coefficients; T = t-values: Sig T = significance levels.

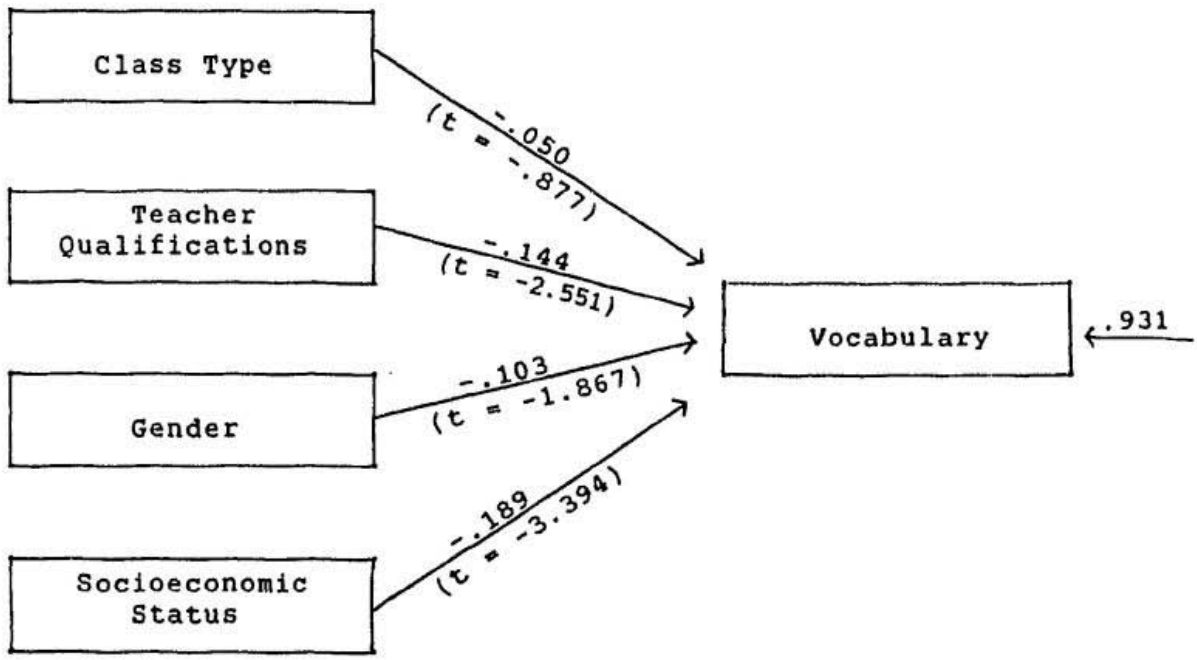

Figure 1. Path Diagram for Vocabulary Model.

"There is no significant relationship between the mean profiles of achievement in Vocabulary CTBS scores of rural grade six students and the class type in which they are enrolled, multi- grade or single-grade classrooms".

The results for equation one are contained in Table 5 and Figure 1 presents a graphic view. The earlier tentative acceptance of Hypothesis Number One concerning the relationship between mean Vocabulary CTBS scores and the Class Type of the students' instruction was reconfirmed and accepted. The t-value of -.877 was not significant at the .05 level and the beta coefficient between class type and Vocabulary CTBS scores was -.050.

Two of the independent variables, Teacher Qualifications and Socioeconomic Status, had significant t-values at the .05 level of significance. Their t-value was -2.551 and -3.394 with a significance level of .011 and .001 respectively. Students of highly qualified teachers scored higher on Vocabulary than students of teachers with low qualifications. Students of high socioeconomic status scored higher on Vocabulary than students of low socioeconomic status. The independent variable, Gender, had a t-value of -1.867 at a .063 significance level. It was not statistically significant at the .05 level of significance. Therefore, Gender had no significant effect on students' Vocabulary CTBS mean score.

Hypothesis Number Two in Chapter 3 states that,

Table 6

Regression Coefficient, Standardized Regression Coefficients, T-Values and Significance Levels for the Reading Comprehension Equation

	Dependent Variable Reading Comprehension				
Independent Variables	B	SE(B)	Beta	T	Sig T
Class Type	-.110	.138	-.082	-1.454	.147
Teacher Qualifications	-.323	.151	-.121	-2.141	.033
Gender	-.288	.133	-.119	-2.159	.032
Socioeconomic Status	-.166	.047	-.195	-3.518	.001

Multiple R .26642

R-Square .06992

Note: B = regression coefficients; SE(B) = standardized partial regression coefficients; T = t-values: Sig T = significance levels.

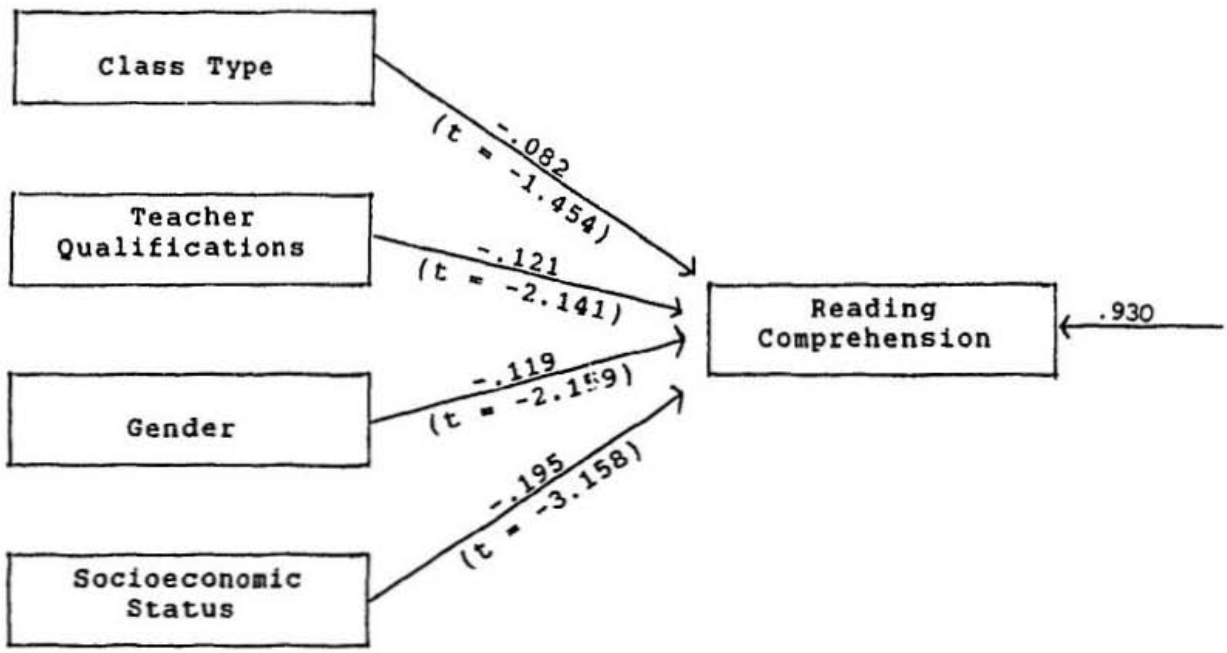

Figure 2. Path Diagram for Reading Comprehension Model.

"There is no significant relationship between the mean profiles of achievement in Reading Comprehension CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms."

The results for equation two are contained in Table 6 and Figure 2 presents a graphic view. The earlier tentative acceptance of Hypothesis Number Two concerning the relationship between mean Reading Comprehension CTBS scores and the Class Type of the students' instruction was reconfirmed. The beta of -.082 with a t-value of -1.454 was not significant at the .05 level of significance.

The other three independent variables, Teacher Qualifications, Gender and Socioeconomic Status, were significant with a beta of -.121, -.119 and -.195 and a t-value of -2.141, -2.159 and -3.518 at the significance levels of .033, .032 and .001 respectively. Students of highly qualified teachers scored higher in Reading Comprehension than students of teachers with low qualifications; female students scored higher in Reading Comprehension than males; high socioeconomic status students scored higher in Reading Comprehension than low socioeconomic status students.

Hypothesis Number Three in Chapter 3 states that, "There is no significant relationship between the mean profiles of achievement in Language Arts CTBS scores of

Table 7

Regression Coefficient, Standardized Regression Coefficients, T-Values and Significance Levels for the Language Arts Equation

	Dependent Variable Language Arts				
Independent Variables	B	SE(B)	Beta	T	Sig T
Class Type	.095	.121	.044	.789	.431
Teacher Qualifications	-.202	.132	-.084	-1.530	.127
Gender	-.448	.117	-.206	-3.820	.000
Socioeconomic Status	-.180	.041	-.235	-4.355	.000
Multiple R	.34425				
R-Square	.11851				

Note: B = regression coefficients; SE(B) = standardized partial regression coefficients; T = t-values: Sig T = significance levels.

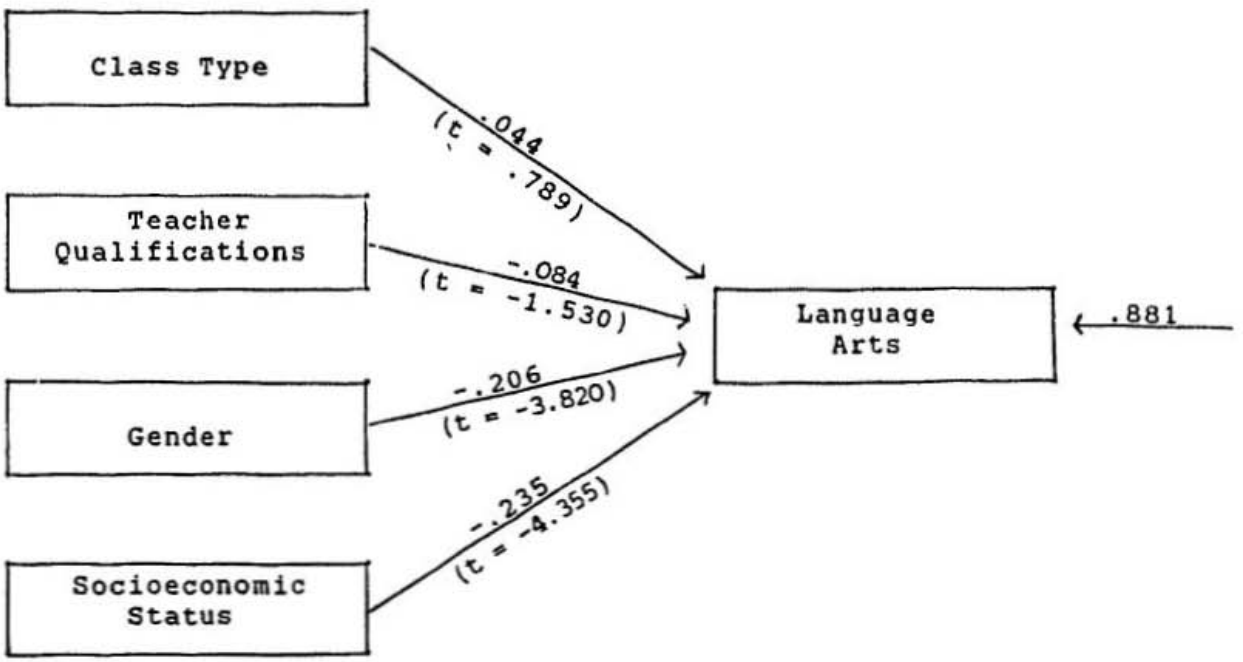

Figure 3. Path Diagram for Language Arts Model.

rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms."

The results for equation three are contained in Table 7 and Figure 3 presents a graphic view. The earlier tentative rejection of Hypothesis Number Three concerning the relationship between mean Language Arts CTBS scores and the Class Type of the students' instruction was not reconfirmed. The beta of .044 with a t-value of .789 was not significant at the .05 level of significance. Therefore, Hypothesis Three has been accepted.

Teacher Qualifications had no significant effect on students' Language Arts CTBS scores since the beta was -.084 with a t-value of -1.530 at a .127 level of significance.

The remaining two independent variables, Gender and Socioeconomic Status, had a t-value of -3.820 and -4.355 at a .000 level of significance with a beta of -2.06 and -.235 respectively. Gender had a significant effect on mean Language Arts CTBS scores; females scored higher than males. Socioeconomic Status had a significant effect on mean Language Arts CTBS scores; high socioeconomic status students scored higher than low socioeconomic status students.

Hypothesis Number Four in Chapter 3 states that, "There is no significant relationship between the mean profiles of achievement in Work Study Skills CTBS scores of

Table 8

Regression Coefficient, Standardized Regression Coefficients, T-Values and Significance Levels for the Work Study Skills Equation

	Dependent Variable Work Study Skills				
Independent Variables	B	SE(B)	Beta	T	Sig T
Class Type	-.091	.116	-.045	-.786	.433
Teacher Qualifications	-.188	.127	-.085	-1.479	.140
Gender	-.006	.112	-.003	-.051	.960
Socioeconomic Status	-.110	.040	-.157	-2.764	.001

Multiple R .18007

R-Square .03242

Note: B = regression coefficients; SE(B) = standardized partial regression coefficients; T = t-values: Sig T = significance levels.

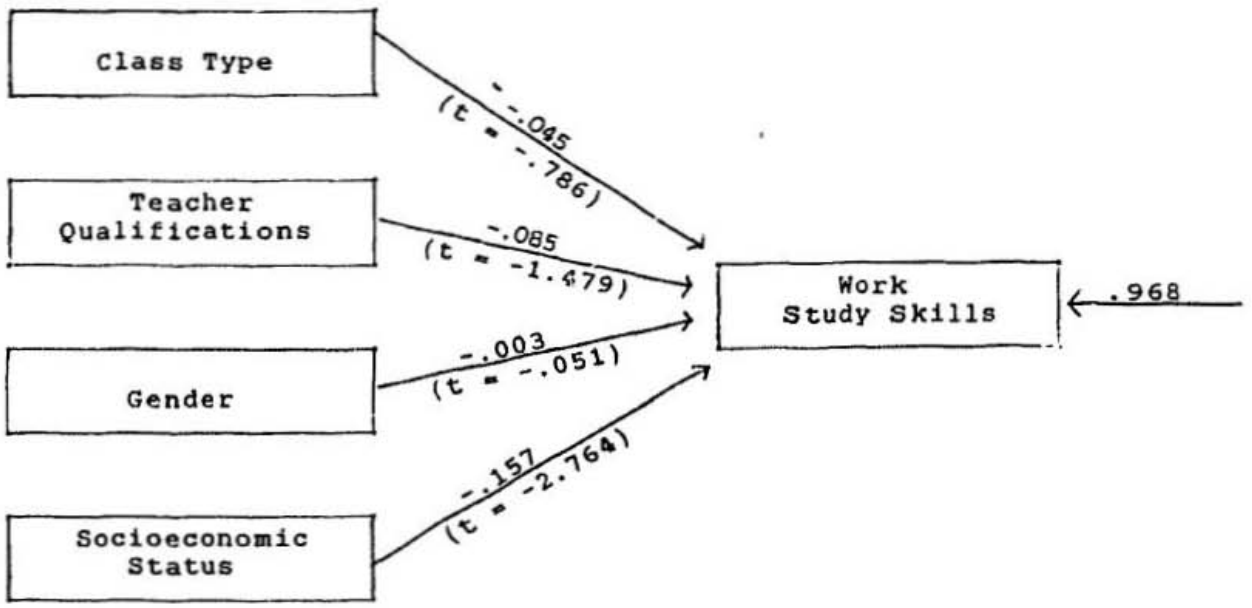

Figure 4. Path Diagram for Work Study Skills Model.

rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms."

The results for equation four are contained in Table 8 and Figure 4 presents a graphic view. The earlier tentative acceptance of Hypothesis Number Four concerning the relationship between mean Work Study Skills CTBS scores and the Class Type of instruction in which the students are enrolled was reconfirmed. The t-value of -.786 was not significant at the .05 level and the beta coefficient between Class Type and Work Study Skills CTBS scores was -.045.

Teacher Qualifications did not have a significant effect on mean Work Study Skills having a beta of only -.085 and a t-value of -1.479 at the .140 level of significance; the beta of -.003 and t-value of -.051 at the .960 level of significance demonstrated that Gender had no statistical significance effect on mean Work Study Skills CTBS scores.

Students of high socioeconomic status scored significantly higher mean Work Study Skills CTBS scores than students of a low socioeconomic status as revealed by its beta coefficient of -.157 and t-value of -2.764 at the .001 level of significance.

Hypothesis Number Five in Chapter 3 states that, "There is no significant relationship between the mean profiles of achievement in Mathematics CTBS scores of rural

Table 9

Regression Coefficient, Standardized Regression Coefficients, T-Values and Significance Levels for the Mathematics Equation

	Dependent Variable Mathematics				
Independent Variables	B	SE(B)	Beta	T	Sig T
Class Type	-.116	.103	-.065	-1.135	.257
Teacher Qualifications	-.223	.112	-.113	-1.987	.048
Gender	-.170	.099	-.095	-1.710	.088
Socioeconomic Status	-.109	.035	-.173	-3.096	.002

Multiple R .23206

R-Square .05385

Note: B = regression coefficients; SE(B) = standardized partial regression coefficients; T = t-values; Sig T = significance levels.

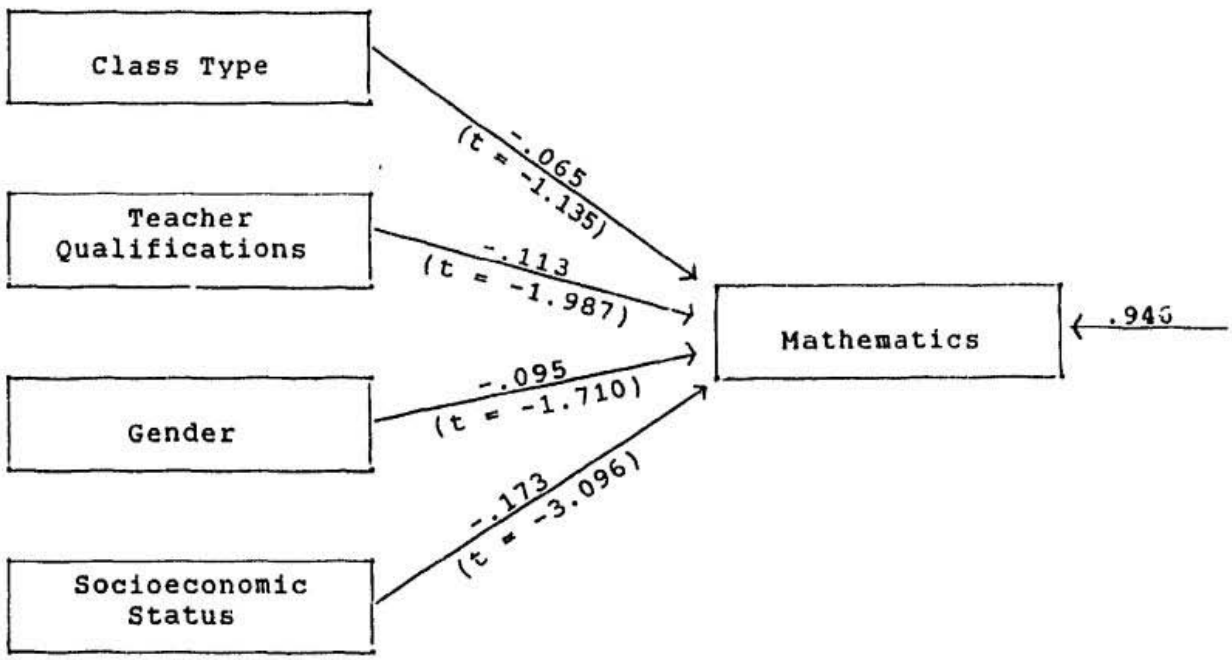

Figure 5. Path Diagram for Mathematics Model.

grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms."

The results of equation five are contained in Table 9 and Figure 5 presents a graphic view. The earlier tentative acceptance of Hypothesis Number Five concerning the relationship between mean Mathematics CTBS scores and the Class Type of instruction in which the students are enrolled was reconfirmed and accepted. The t-value of -1.138 was not significant at the .05 level and the beta coefficient between Class Type and Mathematics CTBS scores was -.065.

The independent variable, Gender, had no statistically significant effect on mean Mathematics CTBS scores. The beta coefficient was -.095 with a t-value of -1.710 at the .088 level of significance.

Both Teacher Qualifications and Socioeconomic Status had a statistically significant effect on the mean Mathematics CTBS scores, since it had a t-value of -1.987 and -3.096 at significance levels of .048 and .002. Students of highly qualified teachers scored higher in Mathematics than students of teachers with low qualifications; high socioeconomic status students scored higher in Mathematics than low socioeconomic status students.

Hypothesis Number Six in Chapter 3 states that, "There is no significant relationship between the mean

Table 10

Regression Coefficient, Standardized Regression Coefficients, T-Values and Significance Levels for the Composite Equation

	Dependent Variable Composite				
Independent Variables	B	SE(B)	Beta	T	Sig T
Class Type	-.068	.106	-.036	-.643	.521
Teacher Qualifications	-.250	.116	-.120	-2.154	.032
Gender	-.148	.102	-.134	-2.154	.015
Socioeconomic Status	-.068	.036	-.225	-4.096	.000

Multiple R .29435

R-Square .08664

Note: B = regression coefficients; SE(B) = standardized partial regression coefficients; T = t-values: Sig T = significance levels.

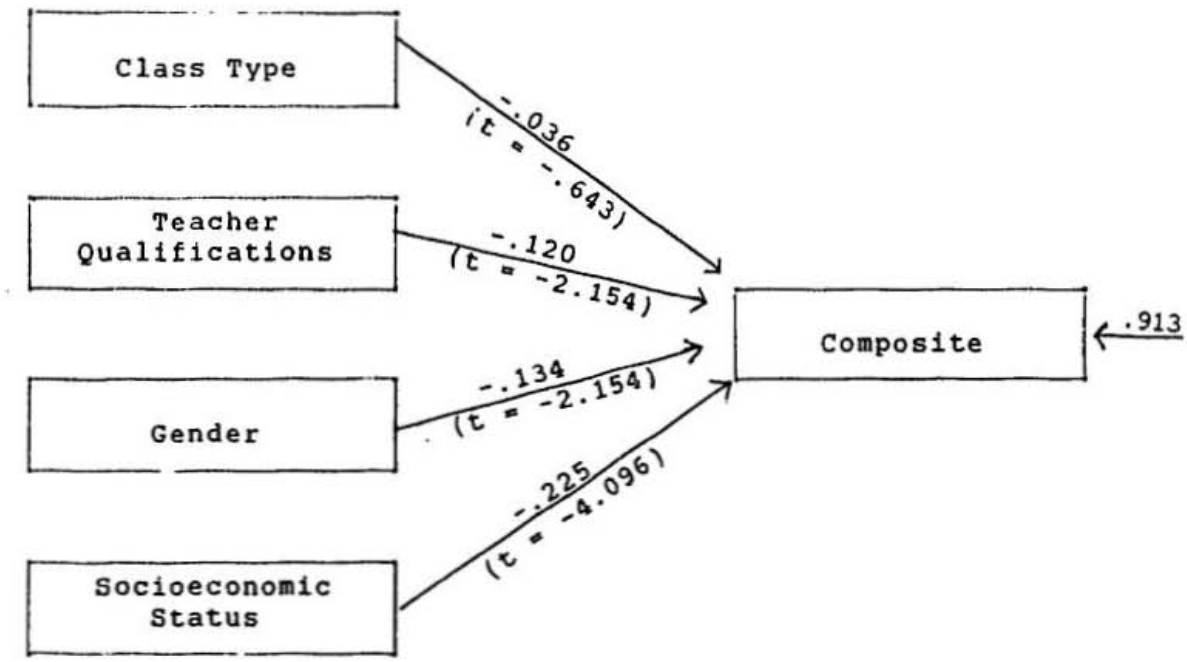

Figure 6. Path Diagram for Composite Model.

profiles of achievement in Composite CTBS scores of rural grade 6 students and the class type in which they are enrolled, multi-grade or single-grade classrooms."

The results of equation 6 are contained in Table 10 and Figure 6 presents a graphic view. The earlier tentative acceptance of Hypothesis Number Six concerning the relationship between mean Composite CTBS scores and the Class Type of instruction in which the students were enrolled was reconfirmed and accepted. The beta coefficient of -.036 with a t-value of -.643 at the .521 level of significance confirmed that there was no statistically significant relationship between Class Type and Composite scores.

The independent variables, Teacher Qualifications, Gender and Socioeconomic Status, had a statistically significant effect on mean Composite CTBS scores with a beta of -.120, -.134 and -.225 and a t-value of -2.154, -2.154 and -4.096 at the significance levels of .032, .015 and .000 respectively. Students of highly qualified teachers scored higher on the Composite CTBS than students of teachers with low qualifications; female students scored higher on the Composite CTBS than males; high socioeconomic status students scored higher on the Composite CTBS than low socioeconomic status students.

In summary, an investigation of the results of the multiple regression analysis revealed that there was no

statistically significant relationship between the academi- mean profile of students and the class type in which they were enrolled. All six multiple regression equations, which were designed to investigate the relationship between students' CTBS scores in six specific curriculum areas and the class type in which they were enrolled resulted in the same conclusion, namely, that there is no significant relationship between the mean profiles of students' achievement and class type. An investigation of the means revealed that for three of the curriculum areas in which data was collected (Reading Comprehension, Work Study Skills, and Math), the mean CTBS scores of students in multi-grade classrooms were slightly higher than the mean CTBS scores of students in single-grade classrooms. In the other three curriculum areas (Vocabulary, Language Arts, and Composite), the mean CTBS scores of students in single-grade classrooms were slightly higher than the mean CTBS scores of students in multi-grade classrooms. Only one curriculum area, Language Arts, revealed a statistically significant correlation between the mean profiles of achievement and the class type of instruction. In conclusion, the statistical analysis of the data collected during this study revealed that there is no significant difference between the academic mean profiles of students enrolled in multi-grade rural classrooms and the academic mean profile of students enrolled in rural

single-grade classrooms.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents an overview of the problem under investigation, reports the basic conclusions reached in the study and offers some recommendations.

Summary

Decreasing student enrollment in the schools of Newfoundland and Labrador compounded with a denominational education system force school administrators to deal with the educational dilemma of increasing the number of multi-grade classroom organizations. Parents and educators have struggled with the following question: What effect will multi-grading have on student's academic achievement?

This study has attempted to ascertain whether or not there is a significant difference in academic achievement between students of rural multi-grade classrooms and students of rural single-grade classrooms. Since a majority of current research concludes that there is no significant difference in achievement between students of multi-grade and single-grade classrooms, the major hypothesis investigated in this study for grade six students in the province of Newfoundland and Labrador was

that "there is no significant difference in academic achievement between students of rural multi-grade classrooms and students of rural single-grade classrooms".

This study is significant and timely, since this Province is now in a period of educational enquiry as to the effectiveness of small schools and the overall delivery of educational services within the Province. The results of this research provide additional information that parents and educators might use in making important decisions about school closures, joint-school services and denominational education.

The sample used for this research was 311 rural grade 6 students dispersed throughout the province who wrote the CTBS exam in 1988. One hundred thirty seven multi-grade and 174 single-grade students were enrolled in their specific class type of instruction for three or more consecutive years. CTBS scores were obtained from the Department of Education and questionnaires soliciting students' class type, teacher qualifications, gender and socioeconomic status were completed by principals of randomly selected schools.

Data collected were analyzed using the SPSS/PC+ to compute correlation coefficients and a multiple regression analysis.

Results and Conclusions

The results of a statistical analysis of data collected permitted this researcher to accept all six hypotheses proposed in Chapter One:

H# 1. There is no significant relationship between the mean profiles of achievement in Vocabulary CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 2. There is no significant relationship between the mean profiles of achievement in Reading Comprehension CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 3. There is no significant relationship between the mean profiles of achievement in Language Arts CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 4. There is no significant relationship between the mean profiles of achievement in Work Study Skills CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 5. There is no significant relationship between the mean profiles of achievement in Mathematics CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

H# 6. There is no significant relationship between the mean profiles of achievement in Composite CTBS scores of rural grade six students and the class type in which they are enrolled, multi-grade or single-grade classrooms.

Therefore, the major hypothesis of the study has been accepted and established: "There is no significant difference in academic achievement between students of rural multi-grade classrooms and students of rural single-grade classrooms". In other words, the conclusions reached from the investigation of achievement of multi-grade students and that of single-grade students in rural schools in Newfoundland and Labrador is that achievement is not significantly different for each class type. Students of multi-grade classrooms are not deprived of a decent standard of education as measured by standardized testing.

Administrators need not question the academic achievement of students who attend multi-grade classrooms. They can base their decision regarding grouping on research supported results rather than administrative expedience.

The conclusions of this study and many other recent studies suggest that the academic achievement of students need not be affected by multi-grade classrooms. The literature researched in Chapter 2 supports administrators in organizing multi-grade classrooms within their school on the basis of the positive gains in the affective domain of students, such as increased leadership ability, self-confidence, independent work study habits and a greater sense of belonging, support and security.

The results of recent research on time-on-task concluded that students of mixed age classes spent more time working independently, while in single-grade classes, instruction is more lecture oriented, directed at the whole class. The Department of Education and school boards throughout the province are advocating child-centered methodology of teaching, rather than teacher centered. Multi-grade classrooms, by organizational nature, cause some teachers to implement a centers approach to teaching.

This study's summary list of characteristics of effective schools extrapolated from the literature are variables that would increase the academic achievement of students within the school system. The central features in an effective school as supported by numerous research investigators are:

1. High expectations for student achievement on the part of staff members;

2. Strong instructional leadership on the part of the principal or another staff member;
3. Clearly articulated school goals and objectives;
4. Frequent monitoring of student achievement;
5. Constant academic emphasis particularly of basic skills;
6. Positive motivational strategies in the form of suitable rewards and praise for students and staff;
7. A safe and orderly school climate;
8. A vigorous staff development program;
9. A high level of parental and community contact;
10. Quality instructional strategies;
11. Low staff turnover; and
12. Clear school mission that brings a co-operative atmosphere among the teaching staff.

All of the characteristics are attainable by any school system including multi-grade classroom organizations. These should be the focus of all school administrator's vision. Therefore, a multi-grade classroom school organization can and should be an effective school.

The current provincial problem of shrinking school enrollment, and the projected future enrollment decline, suggest that multi-grade school organizations may become

the norm in rural Newfoundland. The results of this study also suggest that such an organization need not be harmful academically to the student, and may, in fact, benefit individuals socially and in the affective domain. Hence, the cognitive development of students is not significantly affected by attending multi-grade classroom organizations.

Implications For Future Research

1. The effects of multi-grade classroom organizations on students' achievement including high school students analyzing pass rates and public exam results.

2. A similar study of elementary students' achievement analyzing other measures of achievement and other grade levels.

3. A longitudinal study analyzing the social advantages of being taught by the same teacher for two consecutive years and being in a class with older and/or younger children would be of much benefit. Much of the literature suggests positive gains in the affective domain for students who are taught in multi-grade classrooms.

4. An examination of school administrators' expertise in classroom management, curriculum integration and strategies in teaching multi-gr le classroom

organizations.

Recommendations For Action

1. The Provincial Department of Education should develop an integrated curriculum for multi-grade classroom situations to further improve education.

2. Memorial University should offer both methodology and curriculum courses for teachers who will teach in multi-grade classrooms. Teachers could be taught to combine topics and/or themes in curriculum areas.

3. Credited summer institutes to address such concerns as classroom management, teaching methodology and curriculum development should be provided by the Department of Education in conjunction with Memorial University to assist teachers in multi-grade classrooms.

4. Education students in the Faculty of Education at Memorial University, who plan to teach in multi-grade classrooms, should be allowed to fulfill their intern experience in a multi-grade classroom to receive first-hand knowledge of teaching in that type of classroom organization.

5. The Newfoundland Teachers' Association should establish a Multi-grade Special Interest Council that could highlight multi-grade teaching concerns and inservice

teachers of multi-grade classrooms.

6. The Department of Education should compile information on multi-grading within the Province to determine the number of multi-grade classrooms and to monitor the progress of the students involved.

7. Parents and educators should be educated on the advantages of multi-grading and informed that their child(ren) are not deprived because they attend multi-grade classrooms.

8. School administrators must ensure that comprehensive long range plans are developed for curriculum integration and grades being multi-graded.

9. The Department of Education and local school boards must develop a philosophy of education for multi-grade school organizations.

10. School administrators should seek formal training in classroom management, curriculum integration and teaching methodology for multi-grade classroom organizations.

11. School administrators should be provided inservice in the whole area of multi-grading including its effects on academic achievement.

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APPENDIX A

Data Form

DATA FORM

Part A: Please complete the following chart for the students listed.

Student's Name	Gender	Parent's Occupation	
		Father	Mother

Part B: Please mark [x] the appropiate box.

1. Select the class type in which the students listed in Part A were enrolled.

   |__| multi-grade |__| single-grade

2. Indicate how long the students were enrolled in their specific class type.

   |__| less than 3 years |__| 3 or more consecutive years

3. Specify the 1988 grade 6 teacher's qualifications.

   Years of Experience:

   |__| 0-3 |__| 4-6 |__| 7-9 |__| 10 or more

   University Grade Level:

   |__| 3 years or less |__| 4-5 years |__| 6 years or more

APPENDIX B

Standard Error of Measurement (SEM) and Reliability

SEM AND RELIABILITY

Subtest	SEM Grade Equivalent (Months)	Reliability Coefficient
Vocabulary	3.8	.92
Reading	3.7	.90
Language Skills	2.9	.95
Spelling	4.7	.91
Capilatization	6.3	.81
Punctuation	6.2	.80
Usage	5.6	.86
Work Study Skills	4.1	.87
Visual Materials	6.4	.75
References	5.0	.85
Mathematics	2.6	.93
Concepts	5.1	.82
Problems	4.3	.87
Computation	3.9	.83
Composite	1.5	.98

(Testing standards: Grade 6. St. John's: Evaluation and Research Division - Department of Education.)

APPENDIX C

Correspondence

Bonavista-Trinity-Placentia
Integrated School Board
Clarenville, Nfld. A0E 1J0

P.O. BOX 2001

TEL: (709) 466-3401
FAX: (709) 466-3987

May 2, 1990

Mr. Aubrey Penney
Box 160
St. Lunaire, NF
A0K 2X0

Dear Aubrey:

Further to your telephone call, I have enclosed the information you requested.

I think the topic you have chosen is an excellent one and certainly very timely. I look forward to an opportunity to meet with you to discuss your thesis and my project in a more in-depth manner.

Best wishes,

Linda M. Doody
Multi-Grade Curriculum Project

/mc
Encl.

@

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4 July, 1990.

Mr. Aubrey Penney,
P.O. Box 405, Burton's Pond Apartment,
57 Allandale Rd.,
St. John's, Newfoundland. A1C 5S7

Dear Mr. Penney,

As requested in your telephone call of yesterday, enclosed please find a copy of the Research Report dealing with Multigrade School Achievement. In our study, there was a selection process confounding the results which tended to indicate superior achievement for multigrade classes. If this selection process is not present as you suggested in rural schools, then the differences between the two groups may not appear.

My observations of classes and teacher behaviours suggest that there is likely to be few significant differences in children's achievement since teachers tend to group homogeneous classes within the regular setting. Thus both classes tend to receive similar treatments and differences may be attributed to student differences. Thus students must be carefully matched in the two groups to control for this as a cause.

Good Luck in your investigation. I would appreciate a copy of your final abstract when completed just to see what you find out and whether or not my claims are substantiated.

Sincerely,

Ken Brown, Professor of Education.

P.O. Box 160
St. Lunaire
NF A0K 2X0

April 12, 1991

Dr. Lenora Perry-Fagan
Department of Education
Box 8700
St. John's
NF A1B 4J6

Dear Ms. Perry-Fagan,

I am a graduate student in the Faculty of Education at Memorial University. I am in the process of writing a thesis entitled "A Comparison of Academic Achievement of Elementary Students in Multi-grade and Single-grade Classrooms in Newfoundland and Labrador".

I plan to select one multi-grade school and one single-grade school from each school district within the Province to be included in the study. Upon written permission from each superintendent, I will obtain the 1988 grade 6 CTBS scores to produce 100 matched pairs of multi-grade and single-grade students on the basis of grade, gender, socio-economic status and teacher qualifications. The scores will be analyzed to compare academic achievement of both class types. No individual student or school will be revealed in the study. The confidentiality of both will be concealed.

May I also indicate that this study will compliment the multi-grade study already done for the Department of Education by Ms. Linda Doody. Also, this study may be of interest to the committee conducting the Royal Commission into the delivery of services in Primary, Elementary and Secondary education in this Province.

In light of the above, I request permission to obtain the selected schools' "list report of pupil grade equivalent scores" for the 1988 grade 6 CTBS from the Department of Education. (I am prepared to come to the Department to ascertain the information myself if necessary.) If I am given permission to obtain that information from the Department of Education, the process of obtaining the information necessary for my study will be significantly expedited. Thank you.

Sincerely,

Aubrey Penney

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
DEPARTMENT OF EDUCATION

P. O. BOX 8700
ST. JOHN'S, NFLD
A1B 4J6
Fax: #576 5896

May 22, 1991

Mr. Aubrey Penney
P. O. Box 160
St. Lunaire, Newfoundland
A0K 2X0

Dear Mr. Penney:

Your request to use the results of the 1988 CTBS results for Grade Six has been approved. You should be aware, however, that all student-level results are strictly confidential and, even though, we generally approve the use of test results for legitimate research or thesis purposes, there are guidelines which must be followed by those using these results.

All student level results should be safely stored and only collated information which does not identify students, teachers, or schools can be reported.

Please let me know when you will be needing the data and we shall make arrangements for you to access it.

If you have any questions, please contact me at 576-3000.

Sincerely,

Lenora Perry Fagan, Ph.D.
Director
Evaluation and High School Certification

LPF:js
cc: Mr. L. Badcock
Mr. R. Blagdon

Box 1314
13 Robinson Ave.
Botwood, Nf
A0H 1E0

December 1, 1991

Dear Principal:

I am a graduate student in the Faculty of Education at Memorial University. I am in the process of writing a thesis entitled "A Comparison of Academic Achievement of Elementary Students in Multi-grade and Single-grade Classrooms in Newfoundland and Labrador".

I have randomly selected schools and students from each school district within the Province to be included in the study. I have obtained the 1988 grade 6 CTBS scores of students in your school from the Department of Education. The scores will be analyzed to compare academic achievement of both multi-grade and single-grade class types. No individual student, teacher or school will be revealed in the study. The confidentiality of all three will be concealed.

Enclosed is a Data Form constructed to solicit further information pertaining to the listed students' gender, socio-economic status, class type and teacher qualifications. I realize that you are very busy at this time of year, but a few minutes of your time before Christmas can provide me with the data needed to complete this study. If you wish to call for further information, please do so at 257-3291(home) or 257-2475(school).

PLEASE COMPLETE THIS DATA FORM AS SOON AS POSSIBLE.

Thank you.

Sincerely,

Aubrey Penney

Box 1314
13 Robinson Ave.
Botwood, Nf
A0H 1E0

January 1, 1991

Dear Principal:

Just prior to the Christmas Break, you received a survey which is required as part of my thesis for an M. Ed. degree at Memorial University. I realize that you receive many surveys and that just prior to the Christmas Break is a very busy time for principals. The survey is an integral part of my study which includes a small sample of only two schools per school district within the province. Because of the relatively small sample size and in order to achieve meaningful results, it is critical that virtually all surveys be returned.

I have included another copy of the survey and the cover letter with a complete explanation in hope that you will indeed complete and return it to me. There is also a self addressed envelope enclosed.

If you have already completed and mailed the survey, please disregard this letter.

Thank you for your co-operation.

Sincerely,

Aubrey Penney

TERRA NOVA CAPE FREELS
INTEGRATED SCHOOL BOARD

Head Office: 203 Elizabeth Drive, Gander, NF A1V 1H6
Phone 709-256-2547/4324 Fax 709-651-3044
Badger's Quay Office: Box 9, Badger's Quay, NF A0G 1B0
Phone 709-536-2422/3250 Fax 709-536-2185

June 28, 1991

Mr. Aubrey Penney
13 Robinson Avenue
Botwood, NF
A0H 1E0

Dear Mr. Penney:

Permission is granted to include this school district in your study, "A Comparison of Academic Achievement of Elementary Students in Multi-Grade and Single-Grade Rural Classrooms in Newfoundland and Labrador". If possible we would like to have a copy of the findings, conclusions and recommendations.

Attached is a list of schools and their addresses.

Sincerely

Jack Waye
District Superintendent

JW/fg

enclosure

Green Bay Integrated School District

Box 550, Springdale, Nfld A0J 1T0

21 June 1991

Aubrey Penney
P.O. Box 1314
13 Robinson Ave.
Botwood
NF A0H 1E0

Dear Sir:

Permission is hereby given for you to conduct part of your study in the schools of this district. Please note however that participation by any school is voluntary on their part.

Please find attached a list of our schools. Those highlighted by the yellow marker have some or all classes multi-graded. These range from 2 grades per classroom to K-6 in one classroom.

Good luck with your study.

Best wishes.

Yours sincerely,

G. L. Moss, Ed.D.
Superintendent of Education

Labrador East Integrated School Board
Mailbag 3021, Stn B Happy Valley-Goose Bay Labrador NF A0P 1E0
Telephone (709) 896-2431 Fax (709) 896-9638

June 27, 1991

Aubrey Penney
P. O. Box 1214
13 Robinson Avenue
BOTWOOD, NF
A0H 1E0

Dear Aubrey:

I am happy to provide you permission to use our school district in your study. Our schools are listed below as you requested.

MULTI-GRADED	NON MULTI-GRADED
	Happy Valley-Goose Bay
AMOS COMENIUS MEMORIAL, HOPEDALE	GOOSE HIGH SCHOOL
J. C. ERHARDT MEMORIAL, MAKKOVIK	ROBERT LECKIE INTERMEDIATE
NORTHERN LIGHTS ACADEMY, RIGOLET	SPRUCE PARK ELEMENTARY
HENRY GORDON ACADEMY, CARTWRIGHT	PEACOCK ELEMENTARY
ST. GEORGE'S SCHOOL, PARADISE RIVER	JENS HAVEN MEMORIAL, NAIN
MUD LAKE ELEMENTARY, MUD LAKE	
LAKE MELVILLE SCHOOL, NORTH WEST RIVER	

Enclosed please find the 1991-92 school listing, including principals of each school.

Sincerely,

Fred MacLean
Superintendent of Education

FM:rm

enclosure

COMMISSION SCOLAIRE DE
PORT AUX BASQUES
INTEGRATED SCHOOL BOARD 111

P.O. BOX 970. PORT AUX BASQUES, NF. A0M 1C0 (709) 695-3422 - 2530
(FAX) 695-7097

June 26, 1991

Mr. Aubrey Penny
P.0. Box 1314
13 Robinson Ave.
Botwood, NF
A0H 1E0

Dear Mr. Penney:

This is in response to your letter, and to give you permission to use the Grade Six CTBS results from selected schools in this district for the purposes of your thesis project. The schools with grade six are:

St. James' Elementary, P.0. Box 1060, Port aux Basques
LeGallais Memorial, P.0. Box 170, Isle aux Morts
* Ocean View, Petites
* Douglas Academy, LaPoile
* Grand Bruit All-Grade, Grand Bruit

* Multi-grade classrooms.

Best Wishes!

Sincerely,

J.W. Roberts
DISTRICT SUPERINTENDENT

JWR/dkt

VINLAND/STRAIT OF BELLE ISLE INTEGRATED SCHOOL BOARD

P.O. BOX 129
ST. ANTHONY, NEWFOUNDLAND A0K 4S0

St. Anthony Office
Tel. (709) 454-3510
Fax: (709) 454-3533

Flower's Cove Office
Tel. (709) 456-2737
Fax: (709) 456-2109

July 10, 1991

Mr. Aubrey Penney
P.O. Box 1314
13 Robinson Avenue
Botwood
Newfoundland
A0H 1E0

Dear Mr. Penney:

Permission is hereby granted for you to access information from two randomly selected schools within our district for work on your Master's Degree.

The information you requested regarding schools is attached.

Best wishes with your studies.

Sincerely yours,

Robert H. Mesher
Associate Superintendent of Education
RHM/jb
encl.

Burin Peninsula Integrated School Board

Roy G. Bonnell
Chairperson

Ronald M. Brown
Superintendent

Cyril H. Leaman
Business Administrator

Salt Pond
Newfoundland

Mailing Address:
P.O. BOX 1172
MARYSTOWN, NFLD.
A0E 2M0
PHONE 891-2150
FAX. 891-2736

June 21, 1991

Mr. Aubrey Penney
P. O. Box 1314
13 Robinson Avenue
Botwood, NF
A0H 1E0

Dear Sir:

I am in receipt of your letter in which you requested my permission to include the district of Burin Peninsula Integrated School Board in your thesis research entitled: "A Comparison of Academic Achievement of Elementary Students in Multi-grade and Single-grade Rural Classrooms in Newfoundland and Labrador".

It is with pleasure that I grant you permission to include my district in a study which certainly appears interesting. I have also included a list of all of our schools with appropriate information. The schools with the asterisk sign preceding the name will indicate to you those containing multi-grade classes. The others are single-graded.

If I can be of any further assistance please feel free to call or write. Best wishes for a successful completion to your program.

Sincerely,

Ronald M. Brown
DISTRICT SUPERINTENDENT

RMB:jh

LABRADOR WEST INTEGRATED SCHOOL BOARD

669 Tamarack Drive - Telephone (709) 944-7628
Labrador City, Newfoundland & Labrador A2V 2V2

June 28, 1991

Mr. Aubrey Penney
P. 0. Box 1314
13 Robinson Avenue
Botwood, NF
A0H 1E0

Dear Mr. Penney:

This will acknowledge receipt of your recent letter seeking permission to access our Grade 6 CTBS scores as part of your thesis work comparing multi-grade and single-grade classrooms. I am pleased to advise you that permission is hereby given for you to access that information and you should feel free to contact the principal of any of our schools should they be selected.

In response to your request for a listing of our schools relative to multi-grading or single-grading, please be advised that all of our schools are single-graded and the addresses are as follows:

- **C. E. McManus Primary School**
  Bristol Crescent
  Labrador City, NF
  A2V 1J2
- **A. P. Low Elementary School**
  Bartlett Drive
  Labrador City, NF
  A2V 1G6
- **Menihek Integrated High School**
  613 Lakeside Drive
  Labrador City, NF
  A2V 2W9
- **J. R. Smallwood Collegiate**
  P. 0. Box 5000
  Wabush, NF
  A0R 1B0

Your thesis makes a very interesting comparison, especially at a time when there is considerable controversy as to whether or not pupils actually can achieve well in multi-graded classrooms. I would appreciate very much receiving a summary of your conclusions.

Yours sincerely,

Robert F. Martin
School Superintendent

RFM/blc

Conception Bay South Integrated School Board

P.O. Box 220, Manuels, Conception Bay, Newfoundland A0A 2Y0
Telephone: (709) 834-5511 or 834-5512 or 834-5525
Fax: (709) 834-4735

115

June 21, 1991

Mr. Aubrey Penney
P.O. Box 1314
13 Robinson Avenue
Botwood, NF
A0H 1E0

Dear Mr. Penney:

RE: Your letter received June 21, 1991

I would be happy to have this district participate in your study as outlined in your recent letter. However, I should point out that we do not have any multi-grade classrooms in this school district.

Yours truly,

Randell A. Dawe
District Superintendent

RAD:ca

The Avalon Consolidated School Board
P.O. BOX 1980, ST. JOHN'S, NEWFOUNDLAND A1C 5R5
TELEPHONE (709) 754-0710 FAX (709) 754-0122

July 11, 1991

Mr. Aubrey Penney,
P.O. Box 1314,
13 Robinson Avenue,
Botwood, NF
A0H 1E0

Dear Mr. Penney:

This is in reply to your letter requesting permission to access information from two randomly selected schools within our district for the purpose of completing your thesis: "A Comparison of Academic Achievement of Elementary Students in Multi-grade and Single-grade Rural Classrooms in Newfoundland and Labrador".

Unfortunately, we do not yet have multi-grade classrooms, therefore, we are unable to be of assistance to you.

Sincerely,

Fred B. Rowe,
Assistant Superintendent,
(Administration/Student Services).

FBR/jmc

R. C. School Board
Conception Bay North
P. O. Box 460
CARBONEAR, NEWFOUNDLAND
A0A 1T0

July 9, 1991

Mr. Aubrey Penney
P. O.Box 1314
Botwood, NF
A0H 1E0

Dear Mr. Penney:

This letter grants approval for you to access information from schools in this District which you wish to include in your Master's thesis. I am enclosing a copy of the schools of this District and certainly hope that your research in this District goes very well. I also wish you every success in the completion of your thesis.

Yours truly,

NICHOLAS F. HURLEY
District Superintendent

gs

(709) 256-3714

GANDER-BONAVISTA-CONNAIGRE
ROMAN CATHOLIC SCHOOL BOARD

P.O. Box 386
GANDER, NEWFOUNDLAND
A1V 1W8

July 25, 1991

Mr. Aubrey Penney
P. O. Box 1314
Botwood, NF
A0H 1E0

Dear Mr. Penney:

On behalf of the Board permission is granted to access information from two randomly selected schools in our District as per the description in your letter.

Multigrade classrooms are found in the following schools at the grade 6 level:

St. Gabriel's, St. Brendan's, B.B.	A0G 3V0
St. Catherine's, Port Union, T.B.	A0C 2J0

Single grade classrooms at the grade 6 level are found in the following schools:

Ss. Peter & Paul, King's Cove	A0C 1S0
St. Joseph's, 26 Bishop St., Gander	A1V 1V3
Holy Cross Elementary, St. Alban's	A0H 2E0
St. Joseph's, Harbour Breton	A0H 1P0

Grade 6 classrooms in joint service schools are found in

Venture Academy, Fogo	A0G 2B0
Lakewood Academy, Glenwood	A0G 2K0
Bayview Heights Academy, Gambo	A0G 1T0

If you require further information, please contact us.

Best wishes in your thesis.

Sincerely yours,

Jim Hill
Assistant Superintendent

JH:bmh

HOME CHURCH SCHOOL

Roman Catholic School Board, Labrador

119

Commission Scolaire Catholique Romaine du Labrador
Kanakatuapapak Newu Eski-tshiskutamashunanuned Nte Labrador

June 25, 1991

Mr. Aubrey Penney
P.O. Box 1314
13 Robinson Ave.
Botwood, Nfld.
A0H 1E0

Dear Mr. Penney:

This has been forwarded to confirm our approval to include this district in your study of the 1988 Grade Six C.T.B.S. results.

The following is a list of the schools you requested:

1. **Single-Grade Classrooms (Grade 6)**

   Notre Dame Academy - Matthew Ave., Labrador City, Labrador - A2V 2L7
   J.R. Smallwood Collegiate - P.O. Box 4000, Wabush,Labrador - A0R 1B0
   St. Michael's School - Goose Bay, Labrador - AOP 1C0
   Our Lady Queen of Peace - Happy Valley, Labrador - AOP 1E0

2. **Multi-Grade Classroom (Grade 6)**

   Our Lady of Labrador - West Ste. Modeste, Labrador - AOK 5S0
   St. Peter's School - Black Tickle, Labrador - AOK 1N0

Sincerely yours,

Patrick J. Furlong
DISTRICT SUPERINTENDENT

PJF/ew

P.O. Box 1300
Wabush, Nfld. & Labrador
A0R 1B0 (709) 282-6838

Mail Bag 3019
Happy Valley, Nfld. & Labrador
A0P 1E0 709 896-5704

P.O. Box 69

Roman Catholic School Board

for the

Burin Peninsula

Marystown, Newfoundland
A0E 2M0

120

June 26, 1991

Mr. Aubrey Penney
P. O. Box 1314
13 Robinson Ave.
Botwood, NF
A0H 1E0

Dear Mr. Penney:

Regarding your request to access information regarding the 1988 grade six CTBS scores. I regret that we are unable to release any information that would involve identification of individual students. However, you may access any of our district or individual school results as provided by the Department of Education.

In order to obtain individual student results you would be required to obtain the written permission of each student's parent or guardian.

A list of all our schools and their addresses is attached.

Yours sincerely,

Michael P. McCarthy
ASSISTANT SUPERINTENDENT (PROGRAMS)
MPMC/bp

TELEPHONE 753-8530

Roman Catholic School Board for St. John's

BELVEDERE
BONAVENTURE AVENUE
ST. JOHN'S, NEWFOUNDLAND
A1C 3Z4

1991 07 09

Mr. Aubrey Penney
P.O. Box 1314
13 Robinson Avenue
Botwood
Newfoundland
AOH 1EO

Dear Mr. Penney,

This is to acknowledge your recent letter requesting permission to conduct research in our schools.

Permission is granted for you to work in two schools. When you make your selections please call me and I will contact the principals concerned and ask for their cooperation.

I am enclosing a list of our schools. There are no multi-grade classrooms in this district.

Best wishes for success in your work.

Yours truly,

Geraldine Roe
Associate Superintendent
Curriculum/Instruction

/msc

ROMAN CATHOLIC SCHOOL BOARD — HUMBER ST. BARBE

P.O. BOX 368 CORNER BROOK NEWFOUNDLAND A2H 6G9
TEL. (709) 634-5052

25 June 1991

Mr. Aubrey Penney
P.O. Box 1314
13 Robinson Ave.
Botwood, NF
AOH 1EO

Dear Mr. Penney:

Re: Request to access CTBS information from two randomly selected schools in our District

Your request is granted subject to the following conditions:

1. You must have the cooperation of the appropriate principal.

2. The information is obtained from the principal, not from the Department of Education.

3. All information is kept in the strictest confidence.

4. A copy of your findings is sent to me.

Best wishes.

Sincerely,

Leo P. Whelan
SUPERINTENDENT OF EDUCATION

LPW/bc

Roman Catholic School Board Exploits-White Bay

P.O. Box 278 | Lind Avenue, Grand Falls, Nfld. A2A 2J7 | Tel. 489-5798

June 21, 1991

Mr. Aubrey Penney
P.O. Box 1314
Botwood, Newfoundland
A0H 1E0

Dear Mr. Penney:

As per your request, and to assist you in your proposed study, please find enclosed a list of the schools under our jurisdiction. Please note that the schools marked with an astrict * contain multi-grade classrooms, all other contain single-grade classrooms.

Good luck in your thesis.

Yours very truly,

Dennis Fewer,
District Superintendent

rms

TELEPHONE (709) 334-2606
334-2700
Fax 334-3600

R. C. School Board
FOR
Ferryland District
MOBILE, NEWFOUNDLAND

June 26, 1991

Mr. Aubrey Penney
P.O. Box 1314
13 Robinson Avenue
Botwood, NF
A0H 1E0

Dear Mr. Penney:

You are granted permission to contact our principals concerning your research.

I wish you and your supervisor, Dr. Treslan well in your undertaking.

Sincerely,

F.J. Galgay
SUPERINTENDENT

FJG/jmc

WESTERN AVALON R.C. SCHOOL BOARD
PLACENTIA OFFICE
P.O BOX 340
PLACENTIA, NEWFOUNDLAND
A0B 2Y0
TELEPHONE: 227-2005/2006/2044
FAX:227-3991

July 29, 1991

Mr. Aubrey Penney
P.O. Box 1314
13 Robinson Ave
Botwood, NF
A0H 1E0

Dear Mr. Penney:

As per your request, please be advised that permission is hereby granted for you to access information from two randomly selected schools within our district.

If we can be of any further assistance to you, please do not hesitate to contact us.

Yours truly,

JOHN HARTE
Associate Superintendent

maw

Appalachia Roman Catholic School Board
P.O. Box 5200, Stephenville, Newfoundland, A2N 3M5 : Tel. (709)643-9525 : Fax (709)643-9235

June 21, 1991

Mr. Aubrey Penney
P.O. Box 1314
13 Robinson Avenue
Botwood, Nf
A0H 1E0

Dear Mr. Penney:

In reply to your recent letter this is to advise that we have no multi-grade classroom situations for 1991-92.

Sincerely,

Andrew D. Butt
Superintendent

ADB/je

Pentecostal Assemblies Board of Education
P. O. BOX 130, WINDSOR, NEWFOUNDLAND, CANADA A0H 2H0
Telephone (709) 489-5751

20 June 1991

Mr. Aubrey Penney
P.O. Box 1314
Botwood, Nfld.
AOH 1EO

Dear Mr. Penney:

Christian Greetings!

This is in response to your letter received June 20, 1991 requesting permission to include two randomly selected schools of our district to participate in a research project related to your M.Ed. degree program requirements.

Permission is hereby granted as per your request. We are including herewith for your information a list of the schools under our jurisdiction.

We wish you well with your thesis research.

Yours sincerely,

R.D. Wilkins
Superintendent of Schools

RDW/la
Enclosure